

**In The Matter Of:**

*State of Kansas - Division of Water Resources  
Kansas Department of Agriculture*

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*City of Wichita's Phase II  
Vol. 1  
December 10, 2019*

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STATE OF KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the )  
City of Wichita's Phase II )  
Aquifer Storage and ) Case Number  
Recovery Project in Harvey ) 18 WATER 14014  
And Sedgwick Counties, )  
Kansas. )

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Pursuant to K.S.A. 81a-1901  
and K.A.R. 5-14-3a.

FORMAL HEARING

Volume I

This matter came on for Formal Hearing  
before the Honorable Presiding Officer Constance  
C. Owen for the Division of Water Resources of  
the State of Kansas, at Halstead, Kansas, before  
Rachelle Smith, a Certified Shorthand Reporter  
of Kansas, December 10, 2019, at 9:02 a.m.

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A P P E A R A N C E S

The City of Wichita Department of Public Works & Utilities appeared by its attorney, Mr. Brian K. McLeod, Attorney at Law, 455 North Main Street, Wichita, Kansas, 67202.

The Division of Water Resources Kansas Department of Agriculture appeared by its attorney, Mr. Aaron Oleen, Attorney at Law, 1320 Research Park Drive, Manhattan, Kansas 66502.

The Equus Beds Groundwater Management District Number 2 appeared by its attorneys, Mr. David J. Stucky and Mr. Thomas A. Adrian, Attorneys at Law, 313 Spruce, Halstead, Kansas 67056.

The Intervenors appeared by their attorney, Ms. Tessa M. Wendling, Attorney at Law, 1010 Chestnut Street, Halstead, Kansas 67056.

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P R O C E E D I N G S

THE HEARING OFFICER: Thank you, everyone, for being here. We'll now go on the record and our court reporter will begin recording what takes place here today.

Can everyone hear me? Well, I shouldn't ask because if you can't hear me you wouldn't know.

This case is entitled: In the matter of the City of Wichita's Phase II Aquifer Storage and Recovery Project in Harvey and Sedgwick Counties, Kansas. It is Case Number 18 WATER 14014. Today's date is December 10, 2019. The time is 9:05 a.m. My name is Constance C. Owen, and I will be serving as presiding officer over these next few days.

The formal parties in this proceeding are the City of Wichita, Kansas Department of Agricultural Division of Water Resources, the Equus Beds Groundwater Management District Number 2 and the following individuals who will be collectively referred to as the intervenors. They are Richard Basor, Josh Carmichael, Judy Carmichael, Bill Carp, Carol Denno, Steve Jacob,



1 Terry Jacob, Michael J. McGinn, Bradley Ott,  
2 Tracy Pribbenow and David Wendling.

3 Notice of this hearing was provided  
4 according to K.A.R. 5-14-3a by a notice issued  
5 directly to the parties and notice to the public  
6 by publication, direct mail and posting on the  
7 DWR website.

8 Regarding public comment, thank you to  
9 members of the public who are here today, you  
10 are welcome here. Public comments are welcome  
11 either in writing or orally. As explained in  
12 the notice of hearing written comments may be  
13 submitted any of the following ways. One, by  
14 giving them to DWR staff during the formal phase  
15 of this hearing today, tomorrow or Thursday.  
16 And, DWR, would you please raise your hand so  
17 they know?

18 Number two, written comments can be  
19 given to DWR staff on Friday during the time  
20 reserved for oral public comment. You can mail  
21 written comments to DWR or E-mail them to DWR,  
22 Division of Water Resources, and as instructed  
23 on their website. The deadline for submitting  
24 written comments will be midnight on January 17,  
25 2020, at which time the record for this hearing

1 will be closed. Written public comment  
2 submitted before today are already a part of the  
3 record and need not be resubmitted. I will read  
4 and carefully consider all written public  
5 comments, whether submitted earlier than today  
6 or at some time before midnight on January 17.

7 For oral public comments a separate  
8 time has been set aside for that, for this week.  
9 Anyone wishing to give oral comments may do so  
10 this Friday morning, December 13, between 9:00  
11 a.m. and 11:00 a.m. That will be in this same  
12 location. As with written public comment I will  
13 carefully consider all oral public comments in  
14 reaching my decision in this case.

15 A display screen has been set up so  
16 that members of the public here today can see  
17 the exhibit while the attorneys are questioning  
18 witnesses. The order of presentation will be in  
19 this sequence. The City of Wichita, DWR,  
20 Groundwater Management District and the  
21 Intervenors.

22 May we have appearances from counsel,  
23 please.

24 MR. McLEOD: Brian McLeod for the City  
25 of Wichita.

1 MR. OLEEN: Aaron Oleen, attorney for  
2 the Division of Water Resources.

3 MR. ADRIAN: Tom Adrian attorney for  
4 Equus Beds Groundwater Management District  
5 Number 2.

6 MS. WENDLING: Tessa Wendling for the  
7 Intervenors.

8 THE HEARING OFFICER: Thank you.  
9 Regarding prehearing motions, a number of  
10 prehearing motions were submitted as were  
11 responses to them and those motions have all  
12 been resolved with one exception. Groundwater  
13 Management District 2, Motion to Dismiss filed  
14 March 11, 2019, and the other parties' responses  
15 to it are still under advisement.

16 The purpose of this hearing is to take  
17 information relative to the City of Wichita's  
18 proposal to modify their water rights under the  
19 Aquifer Storage and Recovery Project Phase II.  
20 As documented in previous orders in this case  
21 this hearing shall specifically consider the  
22 following two issues. One, should the bottom of  
23 the storage basin area be lowered as proposed by  
24 the City. And, two, should the changes in the  
25 conditions in the City's ASR Phase II water

1 permits be approved to allow the use of aquifer  
2 maintenance credits, or AMCs, as the City has  
3 described and proposed.

4 As previously ordered, the City bears  
5 the burden of proving by the preponderance of  
6 the evidence that the proposed changes to the  
7 project meet regulatory and statutory  
8 requirements. This includes the burden to prove  
9 that the proposed changes will neither impair  
10 use under existing water rights nor  
11 prejudicially and unreasonably affect the  
12 public's interest.

13 As documented in our recent prehearing  
14 order on final status conference I am taking  
15 administrative notice of the following: The  
16 Kansas Water Appropriations Act and other Kansas  
17 Statutes, regulations promulgated by the chief  
18 engineer and orders issued by, or on behalf of  
19 the chief engineer, specifically the approved  
20 water appropriation permits for the Wichita ASR  
21 Phase I and Phase II projects, including  
22 official written explanations, transmission  
23 documents and finding some orders related to  
24 those permits.

25 Are there any questions or preliminary

1 items the parties wish to raise at this time  
2 before we start?

3 Okay. Seeing none, then we can get  
4 started. We'll begin with the City of Wichita,  
5 and, Brian McLeod, you may proceed.

6 MR. McLEOD: Thank you. And the City  
7 will first call Mr. John Winchester to the  
8 stand.

9 JOHN WINCHESTER,  
10 was thereupon called as a witness herein, and  
11 after having first been duly sworn to testify to  
12 the truth, the whole truth and nothing but the  
13 truth, was examined and testified as follows:

14 MR. McLEOD: Preliminarily to get the  
15 proposal of record, I will offer, as I will have  
16 the Reporter mark it as Exhibit 1.

17 (City Exhibit 1 was marked for  
18 identification by the Reporter.)

19 MR. McLEOD: The proposal and  
20 attachments which will serve to show what the  
21 City's proposal was, and as issues have been  
22 raised whether it was sufficiently and  
23 reasonably supported for the hearing officer to  
24 hold the hearing on it. We'll also show how  
25 that proposal, when submitted, was supported.

1 I offer it for admission, if there are  
2 no objections.

3 THE HEARING OFFICER: Any objections?  
4 Hearing none, Exhibit 1 will be admitted.

5

6 DIRECT EXAMINATION

7 BY MR. MCLEOD:

8 Q. Please state your name for the record.

9 A. My name is John Winchester.

10 Q. Mr. Winchester, what is your occupation?

11 A. I am a water resources engineer specializing in  
12 water rights, planning and management, primarily  
13 for municipalities.

14 Q. And in terms of your education, what's the  
15 extent of your post secondary education?

16 A. I have a bachelors degree in watershed science  
17 and a master's degree in civil engineering, both  
18 from Colorado State University.

19 Q. Do you hold any professional licenses or  
20 registrations?

21 A. Yes.

22 Q. And what are those?

23 A. I am registered in four states Kansas, Colorado,  
24 New Mexico as a professional engineer and  
25 actively registered in Oklahoma.

1 Q. Where are you employed?

2 A. I am self-employed. I work for High Country  
3 Hydrology located west of Colorado, Boulder,  
4 Colorado.

5 Q. How long has that been the case?

6 A. I have been in business since 2008.

7 Q. What is your title there at High Country  
8 Hydrology?

9 A. I am the president.

10 Q. How about your previous employment immediately  
11 before High Country?

12 A. I worked for a firm called Hydrosphere Resource  
13 Consultants, which was located in Boulder. It  
14 is also a water rights planning firm. I was  
15 there from 1996 through 2008.

16 Q. And what was your title there?

17 A. I was a project manager.

18 Q. And did it involve similar work to what you do  
19 for High Country?

20 A. Yes.

21 Q. Have you been accepted as an expert witness in  
22 other trials or hearings?

23 A. Yes.

24 Q. And can you give us an example of what kinds of  
25 trials and hearings.

1 A. Yes. Most recently was as the applicants'  
2 engineer for a new water right on the south  
3 Platte River. We were looking to change  
4 existing agricultural rights to municipal use.  
5 Before that it was for a, as an engineer, for a  
6 defendant, the State of Colorado versus this  
7 farmer down on what there is known as the  
8 Arkansas River near John Martin there in  
9 Colorado.

10 Q. Was the State of Colorado attempting to do their  
11 state version of administering his rights in  
12 some respect?

13 A. Yes. There was a dispute about whether or not  
14 there was a futile call on a tributary.

15 Q. In the course of your water resources modeling  
16 work what are some of the models of which you  
17 have experience?

18 A. So we have used a wide variety everything from  
19 Excel spreadsheets to MODSIM, which was created  
20 at Colorado State University. Some of its  
21 sister models, ExcelCRAM, RESNET, RiverWare,  
22 which was developed by the Texas, I am sorry,  
23 the Tennessee River Valley Authority for  
24 hydropower, models for EPA network systems which  
25 are distribution system models.



1 Q. In the lime colored notebook on the table behind  
2 the tab for expert witnesses, can you locate  
3 your curriculum vitae, or if you prefer, resume.

4 A. (Witness reviews documents).

5 MR. McLEOD: Found it. Let's mark this  
6 as Exhibit 2.

7 (City Exhibit 2 was marked for  
8 identification by the Reporter.)

9 Q. Mr. Winchester, can you identify that document  
10 for us?

11 A. Yes. It's my resume.

12 Q. And was this a document that you created?

13 A. Yes.

14 Q. And approximately when it was it prepared?

15 A. August of 2018.

16 Q. At the time it was prepared, were its contents  
17 an accurate reflection of your professional  
18 experience as of that date?

19 A. Yes.

20 MR. McLEOD: I formally offer Exhibit  
21 2, if there are no objections.

22 THE HEARING OFFICER: Any objections?

23 MR. ADRIAN: No objections.

24 BY MR. McLEOD:

25 Q. At the time the document was generated, Mr.

1 Winchester, it looks like some the work that is  
2 referred to, including some of the modeling in  
3 drought analysis for the City of Wichita were  
4 discussed as works in progress. Have those  
5 since been completed?

6 A. Some of them, yes.

7 Q. And which ones?

8 A. The system modeling that we have done, I believe  
9 has been finished to determine the return  
10 intervals for the drought plan of record.

11 Q. Have you been involved in any other recent  
12 projects that are not included in the resume?

13 A. Nothing substantial, no.

14 Q. Turning to the topic of drought reconstruction,  
15 what in general is drought reconstruction and  
16 what is the point of doing such an analysis?

17 A. When engineers look at designing projects, we  
18 like to have a target for how robust something  
19 should be. So, for example, typically county  
20 regulations when you look at culvert design,  
21 county regulations will want to have a culvert  
22 size for a ten year flood, state highways are  
23 typically designed for hundred year flood,  
24 federal landscapes are typically designed for  
25 250 year flood. In drought planning

1 municipalities we try to make sure there is a  
2 reasonable level of certainty where we can  
3 provide reliable water supply for the uses that  
4 the city deems most important.

5 And so the work I do is primarily  
6 looking at a combination of water rights and  
7 physical hydrology to determine the water supply  
8 available to municipalities.

9 Q. In Exhibit 1, specifically its Attachment B, and  
10 you can find a copy of it actually in the black  
11 binder in behind the tab proposal.

12 THE HEARING OFFICER: Should I have a  
13 copy of the exhibit book?

14 MR. McLEOD: You should. Can we loan  
15 her DWR's?

16 MR. OLEEN: Can we go off the record?

17 THE HEARING OFFICER: Let's go off the  
18 record.

19 (A short off-the-record discussion  
20 was held at this time.)

21 THE HEARING OFFICER: We are back on  
22 the record now after a short break.

23 BY MR. McLEOD:

24 Q. Mr. Winchester, within Exhibit 1 the proposal  
25 which has been admitted, please turn to the

1 Attachment B and what is that document there as  
2 Attachment B?

3 A. (Witness reviews documents). These attachments  
4 haven't been labeled, but are you referring to  
5 research paper number 45?

6 Q. Yes.

7 A. By Wayne Palmer?

8 Q. Yes. Thank you. And is that a government  
9 document published at the direction of a Bureau  
10 of the United States Government?

11 A. Yes, it is.

12 Q. Is the essential point of that research paper to  
13 outline a methodology to create an index for the  
14 quantitative assessment of droughts so that  
15 droughts from different times and different  
16 places can be compared?

17 A. Yes.

18 Q. What is that index called?

19 A. Research paper number, I am sorry, the index  
20 itself is the Palmer Drought Severity Index,  
21 PDSI.

22 Q. Named after Mr. Palmer who wrote the paper?

23 A. Yes.

24 Q. Is this research paper a reliable authority on  
25 the use of the Palmer Drought Severity Index

1 mechanism to quantify and compare droughts?

2 A. Yes, it's the original document that outlined  
3 the procedure for calculating PDSI.

4 Q. What are some of the government agencies that  
5 use the Palmer Drought Severity Index to  
6 prophesy and record drought conditions?

7 A. The most prominent one would be NOAA. They  
8 publish a drought severity index once a week and  
9 it is published on websites so that water  
10 research managers can see where we are as far as  
11 how wet it is currently in different areas.

12 Q. What do the letters in NOAA stand for?

13 A. National Oceanic Atmospheric Administration.

14 Q. Do you know if it's also used by the U.S.  
15 Department of Agriculture?

16 A. Yes, it is.

17 Q. The United States drought monitor as well?

18 A. Yes, it is.

19 Q. Turning passed the table of contents for that  
20 paper to the first numbered page of the paper,  
21 and particularly the beginning of the second  
22 paragraph in the abstract, it notes the  
23 underlying concept of the paper is the amount of  
24 precipitation required for minimal operation of  
25 the established economy of an area during some

1           stated period is dependent on the average  
2           climate of the area and on the prevailing  
3           meteorological predictors both during and  
4           proceeding the month and period in question.

5                           Is all of that basically recognizing  
6           that the index value that gets assigned to a  
7           period will be influenced by the soil moisture  
8           resulting from the conditions of the preceding  
9           period and then factors such as temperature,  
10          precipitation and evapotranspiration during the  
11          period?

12    A.    Yes.

13    Q.    In the next paragraph, it mentions successive  
14          monthly index values for past dry periods were  
15          combined by a relatively objective procedure to  
16          yield an equation for calculating drought  
17          severity on four classes mild, moderate, severe  
18          and extreme. What are the numerical index  
19          values that would apply to each class of  
20          drought?

21    A.    For drought, zero level would be considered a  
22          normal period. Negative one, the rates go from  
23          negative one to negative four, with negative one  
24          being the most mild and negative four being the  
25          most extreme.

1 Q. And some people use larger integers than four.  
2 Some are positive six to negative six, but it is  
3 the same relationship where they are doing that,  
4 negative is the most severe, positive is the  
5 wettest period?

6 A. Yes.

7 Q. Do you know why there is that range, that some  
8 people use a four and four and others use a six  
9 and six?

10 A. I believe that it was originally aimed at plus  
11 and minus four or five and as we have gone back  
12 in time and looked at Paleo records we found  
13 events that were more extreme and they had to  
14 extend it.

15 Q. And in Mr. Palmer's original version it was four  
16 and four for the parameters?

17 A. Yes.

18 Q. Looking back to the page we were on in the first  
19 paragraph of the introduction, there is an  
20 observation that the term drought may mean  
21 different things to different people. Does it  
22 follow from that that the first step in deriving  
23 a tool were for a place to place, a period  
24 comparison would be to come up with the specific  
25 and consistent definition of drought?

1 A. Yes.

2 Q. And turning to the next page in the right-hand  
3 column we see the author has identified a common  
4 element among meanings which he sees as people  
5 use the term drought for a moisture shortage  
6 that seriously affected the economy of their  
7 region. And he has, therefore, adopted the  
8 American Meteorological Society's definition of  
9 drought as a prolonged and abnormal moisture  
10 deficiency; is that correct?

11 A. Yes.

12 Q. So for purposes of the Palmer Drought Severity  
13 Index that is the meaning of drought?

14 A. Yes.

15 Q. Turning back in the exhibit to the page that is  
16 numbered Page 34, at the Palmer meteorologic  
17 drought paper, we can see western Kansas was  
18 actually one of the indexed areas for his study  
19 for the years 1887 to 1957 and 1958 to '62. Is  
20 that correct?

21 A. Yes.

22 Q. So this is some Kansas specific data that Mr.  
23 Palmer was working from when he first put the  
24 concept of this index together?

25 A. Yes.



1 Q. In the discussion on that page we see mention of  
2 two single year droughts in 1894 and 1913 as to  
3 which he quotes some contemporaneous written  
4 narratives that suggest each was a drought of  
5 disastrous severity; is that correct?

6 A. Yes.

7 Q. And does his discussion there serve to  
8 illustrate how the application of the index may  
9 show that the spike similar subjective  
10 characterizations of the 1894 and 1913 droughts  
11 by people who were in them, when you apply the  
12 index you see the droughts weren't really  
13 similar at all; is that correct?

14 A. Correct.

15 Q. And that would be one of the values of using the  
16 index for comparison, right, that it can pull  
17 out and reveal facts like that?

18 A. Yes.

19 Q. Beginning on that same page, does the PDSI  
20 description of the 1930s drought as a multiyear  
21 drought with 38 months of extreme drought in the  
22 98 month period of August 32 to October of 1940  
23 serve to objectively demonstrate that it also  
24 was not similar to either the 1894 or the 1913  
25 droughts?

1 A. Yes.

2 Q. Compared to 1894, where there was extreme  
3 drought indexed values in July to December, or  
4 50 percent of the period of that year, the 1930s  
5 drought has extreme drought conditions in less  
6 than 40 percent of the indexed period, but  
7 Palmer's discussion on number Page 37 of the  
8 paper reflects that impacts of the 1930s drought  
9 included major dust storms and compared  
10 vegetative cover even on ungrazed prairies from  
11 1932 to '41. What does that tell us?

12 A. That tells us that short-term droughts, for  
13 example, from 1894 and 1913 will have different  
14 affects on both livelihoods and the broader  
15 ecosystem than the extended drought. The  
16 drought in 1930s was longer, or at least some of  
17 the vegetation died and the wind was able to  
18 start mobilizing the sand underneath causing  
19 dust storms.

20 Q. So even though there may have been even more  
21 severe years in the shorter droughts, the  
22 duration of the 1930s drought contributed to an  
23 overall greater impact?

24 A. Yes, that's correct. For dust storms.

25 Q. And because of that, can we conclude that the

1 duration, determinate duration of a model  
2 drought, is as important as identifying the  
3 index severity?

4 A. Yes, it is.

5 Q. If we were simply to assign PDSI values only to  
6 years for which modern meteorological records  
7 exist for south central Kansas how far back  
8 could we go?

9 A. So the meteorological records temperatures and  
10 precipitation go back to late 1880s. Stream  
11 flow is much more recent, 1920s.

12 Q. So a little over a century for temperature and  
13 precipitation, but for stream flow less than a  
14 century?

15 A. Yes.

16 Q. So with that limited data, if we were stuck with  
17 only that, we would be able to tell if there had  
18 been a drought with the duration and severity of  
19 the dustbowl drought in the last century; and,  
20 in fact, there was the dustbowl drought, but  
21 that --

22 MR. STUCKY: I will go ahead and object  
23 as to the leading nature of these questions and  
24 the fact that we are reading the report and  
25 leading the witness along in that regard. So my

1 objection is as to leading.

2 MR. McLEOD: We are in an  
3 administrative hearing, and with a very short  
4 timeframe, I don't think that the leading  
5 nature, which I acknowledge, of some of the  
6 questions is harmful. In fact, it will help us  
7 get through the material faster. Almost all of  
8 Mr. Winchester's material really is background,  
9 it is important background to understand because  
10 drought is the motivation for everything that we  
11 are talking about today. That really will not  
12 be the central substantive issue of the case.  
13 So I think under the circumstances leading  
14 questions ought to be all right.

15 THE HEARING OFFICER: I am going to  
16 overrule your motion. Please proceed.

17 BY MR. McLEOD:

18 Q. So if we were stuck with that data, less than a  
19 century of data, what does that do to our  
20 ability to model a hundred year drought?

21 A. It means that we don't have a solid knowledge of  
22 what, for example, 1% drought, a hundred year  
23 drought would be. We don't know if like the  
24 1930s was more severe or less severe because  
25 it's a period less than hundred years.

1 Q. So the period of the data imposes that  
2 limitation if we use only meteorological  
3 instrumental data?

4 A. Yes.

5 Q. As additional PDSI data is compiled to enable  
6 comparison of droughts over longer periods of  
7 time, how does that support the use of PDSI data  
8 as a predictive tool?

9 A. As the PDSI data has been extended backwards  
10 through tree rings, and other things, we have  
11 been able to get a longer period of record for  
12 the drought wet cycles. And based on that, we  
13 can be more sure that the drought severity we  
14 are looking at is representative of the design  
15 criteria.

16 Q. What are some of the things that people use for  
17 that purpose other than tree ring data?

18 A. There is quite a bit. Some of it is more  
19 generally accepted than others. Certainly tree  
20 rings are where they start, there could be lake  
21 deposits, sediment deposits, wind blown  
22 deposits. There is just a variety of things. I  
23 am not an expert in that area.

24 Q. Are there scientifically recognized means to  
25 generate PDSI values for periods in prior

1 centuries before meteorological record systems  
2 were in place in order to enhance the usefulness  
3 of the PDSI and PDSI demonstrative patterns as a  
4 predictive tool?

5 A. Yes.

6 Q. And the tree rings you mentioned would they be  
7 an example of that?

8 A. Yes.

9 Q. Is the term Paleoclimatology data one of the  
10 terms that's used to determine data from such  
11 sources?

12 A. Yes.

13 Q. Have there been published studies by researchers  
14 that constructed PDSI data sets spanning prior  
15 centuries based on tree ring data?

16 A. Yes, there have.

17 Q. In the white binder, behind the tab drought  
18 reconstruction. Which you see the yellow tab  
19 you kind of have to look through the text that  
20 corresponds to that tab.

21 A. (Witness reviews documents).

22 MR. McLEOD: There is a document which  
23 I am handing to the reporter to mark as Exhibit  
24 3.

25 (City Exhibit 3 was marked for

1 identification by the Reporter.)

2 BY MR. McLEOD:

3 Q. Mr. Winchester, what is this document?

4 A. You are looking at the Drought Reconstruction  
5 for the Continental United States by Edward  
6 Cook?

7 Q. Yes.

8 A. It was written in 1999, it was an article  
9 written for the American Meteorological Society.

10 Q. And what was the publication in which they  
11 published it?

12 A. American Meteorological Society, a journal, peer  
13 reviewed journal.

14 Q. Is the American Meteorological Society a journal  
15 of climate a periodical that publishes  
16 information regularly used by meteorologists and  
17 climatologists?

18 A. That has been my experience, yes.

19 Q. Is that 1999 Cook article a reliable authority  
20 on drought reconstruction using the Palmer  
21 Drought Severity Index in the continental United  
22 States from the period 1700 to 1978?

23 A. Yes.

24 Q. Is the data developed by Cook used by  
25 climatologists and government agencies to

1 discuss drought severity and frequency in the  
2 period predating meteorological records?

3 A. Yes.

4 MR. McLEOD: I will formally offer  
5 Exhibit 3 for admission of this point.

6 THE HEARING OFFICER: Any objections?

7 MR. ADRIAN: Just a moment, please.

8 MR. STUCKY: I guess we'll offer an  
9 objection. Just a moment ago in the testimony  
10 Mr. Winchester indicated that he wasn't an  
11 expert at any kind of ancient data as it relates  
12 to droughts, whether it be tree rings or  
13 examining river bottoms or whatever. The old  
14 data, just a moment ago he testified in that  
15 regard that he wasn't an expert. So if this is  
16 being offered to demonstrate expert testimony,  
17 which would otherwise not be admissible, that's  
18 our objection.

19 MR. McLEOD: I had understood the  
20 witness actually to indicate his experience  
21 shortage was with respect to methods other than  
22 tree rings, and perhaps he can clarify if that  
23 was his meaning.

24 A. So I have certainly used PDSI tree rings, other  
25 data, to extend hydrologic records before. I am



1 not an expert in converting that raw data in to  
2 things like stream flow.

3 MR. McLEOD: The other point I would  
4 make, Madame Hearing Officer, is I believe the  
5 witness did lay the foundation for admission of  
6 the Cook study as a learned treatise, because he  
7 identified both the publication in which it  
8 appears, and the author, as reliable sources of  
9 the authority on these points. And also has  
10 established that the AMS Journal of Climate is a  
11 trade publication that publishes data at this  
12 time used by professional meteorologists and  
13 climatologists. So it meets two exceptions for  
14 any hearsay objection.

15 THE HEARING OFFICER: I will overrule  
16 the objection. Exhibit 3 will be admitted.

17 BY MR. McLEOD:

18 Q. On the first page of that exhibit, Mr.  
19 Winchester, which is numbered Page 1145 in the  
20 actual article, do the authors make their own  
21 observation noting that limited time span of  
22 meteorological records poses a difficulty for  
23 modeling understanding and forecasting drought?

24 A. Yes.

25 Q. And as part of the purpose of the work as they

1 express it in their article they hope to  
2 alleviate that problem through the use of  
3 centuries long annual tree ring chronologies?

4 A. Yes.

5 Q. On the next page, about halfway down in the  
6 left-hand column, do you see where the authors  
7 point out that drought reconstructions have been  
8 used for purposes such as reevaluating the  
9 relationship between bidecadal drought area  
10 rhythm in the western United States?

11 A. Do you have a more specific paragraph?

12 Q. You know actually I, I don't. In my note.  
13 Let's just skip that one.

14 A. Here it is, yes.

15 Q. Okay. Thank you. So also have the drought  
16 reconstructions been used to study the  
17 teleconnection between drought or wetness and  
18 the El Nino-Southern Oscillation in the United  
19 States?

20 A. Yes.

21 Q. So it would be a technique that has been  
22 scientifically recognized for a range of  
23 purposes?

24 A. Yes.

25 Q. Looking at the graphic in the upper right of

1 that page, can you tell if any of the grid  
2 points that were used in the drought  
3 reconstruction study were in Kansas and if so  
4 how many?

5 A. Yes. This is a map that shows where they  
6 reconstructed PDSI records throughout the  
7 continental United States and there are six  
8 points within the State of Kansas.

9 Q. Moving ahead about nine pages, to number Page  
10 1156 of that record. What information does the  
11 subsection headed Discussion provide as to  
12 whether the drought reconstruction based on tree  
13 ring records have been found object reliable?

14 A. (Witness reviews documents). It says that the  
15 reconstructions have captured a spatial  
16 variability of drought across the United States  
17 with a high degree of fidelity.

18 Q. And how were they able to determine that? Do  
19 they base that on time periods where scientists  
20 have the ability to compare the results of tree  
21 ring analysis against actual meteorological  
22 records?

23 A. Yes. So when you create and extend time series  
24 typically what you do is you start with a  
25 certain period of recent, for example, stream

1 flow data. And then you create a model of what  
2 you think happened in the past, but you don't  
3 use the entire period. So, for example, if you  
4 have a stream gauge from 1920 through the year  
5 2000, you might use the stream flow gauge to  
6 create the relationship from 1950 through 2000  
7 and then compare how you predicted formulas  
8 would work compared to the earlier period, which  
9 you didn't base the correlation on. And then  
10 that would give you a degree of certainty that  
11 when you forecast back farther how accurate that  
12 data was.

13 Q. Same book behind the orange divider there is a  
14 document.

15 MR. McLEOD: I will have the reporter  
16 mark this as Exhibit 4.

17 (City Exhibit 4 was marked for  
18 identification by the Reporter.)

19 BY MR. McLEOD:

20 Q. Mr. Winchester, what is this document?

21 A. The title is North American drought:  
22 Reconstructions, causes and consequences, by  
23 Edward Cook and others.

24 Q. And is there a citation at the top of each page  
25 referring to the publication of this article at

1 Earth-Science Reviews 81 (2007) 93-134?

2 A. Yes.

3 Q. What kind of a publication is an Earth-Science  
4 Reviews?

5 A. It's a peer reviewed journal.

6 Q. Do you know who publishes it?

7 A. I believe it's by science direct, under the  
8 Earth-Science Reviews.

9 Q. As far as you know is the Edward R. Cook shown  
10 as a participating author in that paper the same  
11 Edward R. Cook, who helped produce the 1999  
12 article in Drought Reconstruction in the  
13 Continent of the United States?

14 A. I don't know Edward Cook personally but it is  
15 the same name and he works at the same  
16 university in both publications, yes.

17 Q. Is the methodology in the two articles similar?

18 A. Yes.

19 Q. Is this article a reliable authority on drought  
20 reconstruction methods and findings?

21 A. I believe it is.

22 MR. McLEOD: I will formally offer  
23 Exhibit 4 for admission.

24 THE HEARING OFFICER: Any objections?

25 MR. STUCKY: No objection.

1 THE HEARING OFFICER: Exhibit 4 will be  
2 admitted.

3 BY MR. McLEOD:

4 Q. On the first page there, Mr. Winchester, in the  
5 Abstract, the authors note a network of  
6 centuries-long annual tree ring chronologies has  
7 now allowed for the reconstruction of past  
8 drought over North America covering the past  
9 thousand or more years in most regions. And  
10 these reconstructions reveal the occurrence of  
11 past megadroughts of unprecedented severity and  
12 duration, ones that have never been experienced  
13 by modern societies in North America. What are  
14 the ramifications of that to municipal water  
15 utilities?

16 A. It is important that, and I believe that it is  
17 important that municipalities understand that  
18 there may be droughts more severe than are  
19 recorded in historical, say stream flow or  
20 groundwater elevation data. And the reason is  
21 because if you are planning for a 1% drought,  
22 even if you have hundred years of data, you  
23 don't know whether or not that drought has  
24 occurred or not in the period. By looking at  
25 longer periods of record we can be more

1           confident about the risk that water supplies may  
2           be under.

3       Q.    In your opinion would it be prudent for a  
4           municipality to have at least some supply to  
5           meet basic essential demands in the event of a  
6           megadrought?

7       A.    Yes.   That would be very important.

8       Q.    Turning to the next page, Page 94 in the  
9           article, over in the right-hand column, the  
10          authors note that the 1929 to 1940 dustbowl  
11          drought, and the 1946 to '56 southwest drought,  
12          remains the most severe drought since 1900.  And  
13          they mention that they starting end dates for  
14          these drought were determined by an objective  
15          method based on the duration of running sums of  
16          PDSI values.  Can you explain the summing  
17          technique they are discussing and why that is  
18          used?

19       A.    Certainly.  If you have a drought that is one  
20          year long, but be extreme in saying no rainfalls  
21          at all, no moisture falls at all, you will have  
22          an extremely dry drought.  But if that drought  
23          is bracketed by wet years, while it would be  
24          catastrophic for farmers and ranchers, for  
25          municipalities if they have a year's worth of

1 water in storage, they will be able to get  
2 through that. If you have a drought that's five  
3 or ten years long, it may not be as severe as  
4 the individual drought; but if, for example, the  
5 municipality has two years of water in storage,  
6 then it could run out during a longer period of  
7 drought. So while short droughts are important,  
8 as we talked about before, the duration is also  
9 important. And the way to calculate that, one  
10 way to calculate that, is to take an index such  
11 as the Palmer Drought Index and assign that to  
12 each year of the drought. And then you add that  
13 up over the length of the drought. Sort of like  
14 if you were unemployed for five years and you  
15 could add together your expenses over that time,  
16 you would know if your savings were going to be  
17 adequate to carry you through that time or if  
18 they would not.

19 Q. Does the summing method also help you to  
20 determine as to a particular drought whether  
21 that drought has ended or is continuing for a  
22 particular index period?

23 A. I would say the answer to that is it depends.  
24 It's not uncommon at all for longer droughts to  
25 have a year in the middle of that run that is



1 normal or slightly above normal. And in that  
2 case, my opinion is is that the drought would  
3 not technically be over. Where if you looked at  
4 is it a drought yes or no, is it drought yes or  
5 no. If you say is it a drought and it is  
6 slightly above and then it goes back to a  
7 drought, I would not call that drought broken.  
8 So you have to have a little bit of finesse with  
9 that technique.

10 Q. You are posing there a scenario there where  
11 maybe in the fourth year of a drought that has  
12 been ongoing, you did a PDSI that shows normal  
13 precipitation and soil moisture; but the next  
14 year you have got a negative four again. The  
15 summing method helps you to make an evaluation  
16 of whether that drought is ongoing or broken at  
17 that point?

18 A. Yes. As you do a cumulative sum throughout the  
19 years one high value does not ruin, not ruin, it  
20 doesn't sway the total deficit that's built up  
21 over time. There would be an improvement of  
22 deficit of the PDSI, but it may not recover all  
23 the way to normal.

24 Q. Did you employ a similar summing method to  
25 account for drought duration in comparing

1           droughts shown by drought records and  
2           reconstruction data to identify the  
3           characteristics of the 1% exceedance drought for  
4           your work for the City of Wichita?

5       A.    Yes.

6       Q.    Turning to the next page of the article, Page  
7           95, the authors point out that individual  
8           drought years are not necessarily reflective of  
9           cumulative impact, because they may be offset by  
10          weather conditions the following year. They  
11          note that 1934 was more severe than other  
12          drought years shown and reference annual drought  
13          maps, but was also part of a longer sequence of  
14          drier than average years that resulted in a  
15          catastrophic dustbowl drought. What's the  
16          relevance of those observations?

17       A.    I think it is what we were just talking about,  
18           which is that longer droughts may not in  
19           individual years be as dry as a single drought.  
20           But that the cumulative affect of three, four,  
21           ten, a hundred years of below normal  
22           precipitation, if it's slightly below than  
23           normal, can have greater long term affect than  
24           in an individual year. So, for example, earlier  
25           we talked about the droughts of the 1800s and

1 the 1913, I believe it was, where those were  
2 very dry years, but not dry enough to kill the  
3 native vegetation where the soil stayed in  
4 place. Where in the thirties the drought was  
5 long enough the native vegetation died and the  
6 winds were able to mobilize that in the dust  
7 storms.

8 Q. So for that reason, does modeling methodology  
9 need to consider both the depth of severity and  
10 the duration of the droughts that are being  
11 modeled?

12 A. I believe it does.

13 Q. Moving ahead in the article to three pages in  
14 article 98, in the middle paragraph on the  
15 left-hand column there, the authors say:  
16 Succinctly put, the PDSI is a reflection of how  
17 much soil moisture is currently available  
18 compared to that for normal to average  
19 conditions. Do you concur that that is a useful  
20 and simple working definition of PDSI values and  
21 what they do?

22 A. Yes.

23 Q. Across the page in the right-hand column there  
24 is information on the approximate range of the  
25 index. What is that telling us?

1 A. It tells us that the PDSI typically falls  
2 between plus and minus four, and that there can  
3 be years that are either wetter or dryer than  
4 that.

5 Q. In the black binder, and as part of Exhibit 1,  
6 which has already been marked and admitted, it's  
7 attachment C to the proposal. Please look to  
8 that attachment C, if you would.

9 A. (Witness reviews documents). All right.

10 Q. And what is this document, Mr. Winchester?

11 A. This is a technical memo that I presented to  
12 FAIC, which is a contractor for the City of  
13 Wichita, from extending the drought  
14 reconstruction from PDSI data.

15 Q. Is it summarizing analysis that you performed  
16 and conclusions that you reached based on PDSI  
17 data, including the reconstructive PDSI data,  
18 developed by Dr. Edward Cook based on tree ring  
19 records?

20 A. Yes.

21 Q. When you were in the course of trying to look at  
22 a time period of centuries, for your modeling  
23 work, and for part of that work is trying to  
24 identify the probability of a recurrence of a  
25 particular scale of drought in a century, is

1           there any, any other widely recognized data  
2           available for that purpose than that PDSI data  
3           that's reconstructed from tree rings?

4       A.    I believe tree rings are the most common.

5       Q.    Are you aware of any better data source or data  
6           set that has been recognized for that purpose?

7       A.    No, I am not.

8       Q.    In your paragraph on the first page discussing  
9           the available PDSI data you recognized that in  
10          2004 Dr. Cook expanded his original grid  
11          covering the continental United States to where  
12          it now extends to most of North America. Has  
13          that body of PDSI data also been referred to by  
14          U.S. agencies and climatologists as the North  
15          American drought atlas?

16      A.    Yes.

17      Q.    What do they use that for?

18      A.    It's published online, you can look it up. And  
19           again, it's used for planning work to help  
20           understand how severe droughts could have been  
21           in the past.

22      Q.    Who maintains it online?

23      A.    I believe it's the -- I would have to look. I  
24           don't know off the top of my head. The name you  
25           cited is the actual website it's under.

1 Q. Okay. But you are not sure what agency  
2 maintains that?

3 A. Well, no, I am not.

4 Q. Okay. That's fine. Turning to Page 37, you  
5 mentioned that six of the grid locations from  
6 Dr. Cook's 2004 work following Kansas; is that  
7 correct?

8 A. Yes.

9 Q. Which grid box of Wichita would fall within  
10 geographically?

11 A. South central Kansas.

12 Q. But on that same page you also noted that you  
13 found by comparing the summer PDSI with annual  
14 flows from the Little Arkansas River of Valley  
15 Center, that using the PDSI for southwestern  
16 Kansas provided better correlation between the  
17 stream flow and PDSI; is that correct?

18 A. Yes.

19 Q. Can you expand a little bit on that.

20 A. Yes. So looking to find the best correlation  
21 between PDSI and stream flow I looked at all the  
22 grid points within Kansas and in northern  
23 Oklahoma. And as you said, the southwest Kansas  
24 PDSI correlated best to the stream flows on the  
25 Arkansas and Little Arkansas Rivers. I believe

1           that's because they are upstream of here. And  
2           while there may have been more precipitation  
3           during the '30s and the '50s here, that the  
4           stream flows are more affected by what happened  
5           in southwest Kansas than what happened in this  
6           immediate area.

7       Q.   And for that reason, do you think that that  
8           correlation you found supports selecting that  
9           southwestern Kansas PDSI data rather than the  
10          south central Kansas data by using your  
11          analysis?

12      A.   Yes.

13      Q.   What was the period of record covered by that  
14          southwestern Kansas PDSI data?

15      A.   It was from the years 1887 through 2003.

16      Q.   In the actual exhibit that's before you, do you  
17          see any place where that date period of record  
18          is referenced, where the data sets?

19      A.   Yes.

20      Q.   And looking at that closely is the starting year  
21          actually 1887 or 887?

22      A.   Oh, I am sorry, I must have misspoken, 887.

23      Q.   Going to Page 5 of your technical memorandum, it  
24          reflects that your examination of drought  
25          duration and of severity you further limited the

1 data you relied on for the period of 1640 to  
2 2003. Why did you do that?

3 A. When we looked at the correlation between PDSI  
4 and stream flows, we found there was higher  
5 correlation for a shorter period, because for  
6 the first approximately 200 years there were  
7 only 15 sites where they could correlate tree  
8 rings. And after that there were a larger  
9 number of sites. So by limiting it to the  
10 period with a greater number of tree ring sites,  
11 the correlation was much better. And I felt  
12 that the additional years with a poor  
13 correlation did not outweigh a shorter period  
14 with a better correlation.

15 Q. If you had used the data for the full period 887  
16 to 2003 would that have imported a bias toward  
17 drought?

18 A. It certainly could.

19 Q. Summarized in your discussion there is the  
20 process by which the PDSI values generated from  
21 tree ring chronology were used to review  
22 historic droughts of record for their intensity  
23 and duration, and also in the manner in which  
24 exceeding probabilities for the various droughts  
25 were calculated. Was duration basically



1           determined by counting the number of consecutive  
2           years with below average moisture?

3       A.   Generally, yes.  As I said before, if there was  
4           a single year that was normal, or only slightly  
5           above normal, I also included that.  It was in  
6           the middle of a longer drought sequence.

7       Q.   Do you remember what index, positive index  
8           number you used for the cut off that would have  
9           caused you to conclude the drought was broken if  
10          the number had been brought above that?

11      A.   Yes, .5.

12      Q.   Positive .5?

13      A.   Positive .5.

14      Q.   And then after you had examined the droughts of  
15          record for duration, and by the term of record I  
16          include here the reconstructive record from  
17          paleological data, how then was the exceedance  
18          probability determined for the drought of  
19          various duration?

20      A.   So we started by looking at the number of  
21          occurrences over that period of record.  And so,  
22          for example, if there was, if there were, for  
23          example, 12 droughts that happened that were two  
24          years long, that would be given a recurrence  
25          interval -- I can't do the math in my head off

1 the top of my head -- but that would calculate  
2 the recurrence number for that. And then you  
3 would know that, for say it was a ten year  
4 drought, you would know there were 12 of those  
5 in that period of record.

6 Q. Is there a standard equation that expresses the  
7 methodology used for that?

8 A. Yes, there is.

9 Q. What is that?

10 A. The exceedance probability is you take the  
11 values you are interested in, whether it's flood  
12 events or annual PDSI value, and you put them in  
13 order from either greatest to least, or least to  
14 greatest, depending whether you are looking at  
15 floods or droughts, the exceedance is the rank  
16 you are looking at. For example, if you have  
17 100 data points, you might be looking at the  
18 10th value, the 10th value down list, it would  
19 be the number 10 divided by the total number in  
20 the sample plus one for a safety factor.

21 Q. And then for relative severity in the  
22 comparison, did you sum up the cumulative PDSI  
23 values in the years of each drought?

24 A. Yes, I did.

25 Q. Moving on to Page 6 of the technical memorandum,

1 does the left half of Table 1 depict the  
2 statistical characteristics of droughts with a  
3 calculated exceedance probabilities based on  
4 PDSI data?

5 A. Yes.

6 Q. Looking at that table, for example,  
7 statistically would we expect a 1% exceedance  
8 drought to be a drought of eight years duration  
9 with a cumulative PDSI of -22.4, and a median  
10 PDSI of -2.8?

11 A. Yes.

12 Q. Over on the right half of the table, does that  
13 half of the table identify a combination of  
14 drought years, actual drought years, that would  
15 approximate the statistical characteristics of  
16 the droughts with variance exceedance  
17 probabilities. For example, the four year 4%  
18 exceedance probability drought with a cumulative  
19 index of PDSI 8, -8.8, could be modeled with  
20 data from the actual drought years of 1925 and  
21 '26, and 1981 counted twice, which combination  
22 of years would then also have an actual  
23 cumulative PDSI of -8.8 --

24 A. Yes.

25 Q. -- and part of the effort there is matching the

1 PDSI of the statistical model drought to the  
2 PDSI cumulative PDSI of the years that have been  
3 represented?

4 A. Yes.

5 Q. And in that same table, the ten percent  
6 exceedance drought, is shown with a two year  
7 duration, cumulative PDSI of -4.4 and the table  
8 suggests it could be approximated by an actual  
9 two-year drought, which was the drought of 1925  
10 or '26, but if we look at the numbers for 1925  
11 to '26, does the PDSI cumulative value for that  
12 actual drought show us that it was actually more  
13 severe than the statistical ten percent  
14 exceedance drought because it had an actual PDSI  
15 of -4.9?

16 A. Yes.

17 Q. So these representations representative years of  
18 drought on the right-hand side of the table, are  
19 approximations, but they are not always exact as  
20 the cumulative PDSI may be slightly different  
21 than the statistical drought represented?

22 A. Yes. And while you could go and cherry pick  
23 years from the historical records and make them  
24 match exactly. So for example, you might take  
25 1925 to 1932 for that ten percent number to make

1           it match exactly the -4.4. My feeling is it's  
2           better to use historical sequences where you  
3           can, because we know it happened. So if there  
4           are other forcing things, El Nina, volcanic  
5           activity, sun spots, that affected those in more  
6           than one year longer term carry over, that they  
7           would be happening the same over the historical  
8           period, where if you mix or match years you are  
9           never sure if that's true.

10        Q.    And connecting that up with the 1% statistical  
11           exceedance drought, if you look at statistical  
12           1% exceedance drought in that table, you  
13           selected the actual drought period of 1933 to  
14           '40 as a near fit?

15        A.    Yes.

16        Q.    Was that for the reason you just explained that  
17           that was an actual sequence of years where an  
18           actual drought occurred?

19        A.    Yes.

20        Q.    Even though when we look at the actual  
21           cumulative PDSI, the actual drought period in  
22           the 30s, had a -24.4 compared to the -22.4  
23           cumulative PDSI of the statistical 1% exceedance  
24           drought, correct?

25        A.    Yes.

1 Q. So the relationship between the two would be as  
2 a representative drought the drought of the 30s  
3 was slightly more severe than the 1% statistic  
4 exceedance drought; is that correct?

5 A. Yes.

6 Q. And for the statistical 2% exceedance drought,  
7 also shown on the table, the actual drought  
8 period represented by the years 1952 to '56 and  
9 1959 has a cumulative PDSI of -16.1, compared to  
10 the -15.6 cumulative PDSI of the statistical 2%  
11 exceedance drought, is that correct?

12 A. Yes.

13 Q. So again, there is a slight lack of depth there  
14 in that that comparison would show that the  
15 actual drought is slightly more severe than the  
16 modeled statistical 2% exceedance drought; is  
17 that correct?

18 A. So what that shows is -- I believe that's  
19 correct. Let me see if I can rephrase that for  
20 you. The drought based on the PDSI is six years  
21 long. And when I took the six years starting in  
22 1952, the PDSI was closer to zero, less negative  
23 than 15.6. So by excluding the two years, '57  
24 and '58, but including 1959 in that six years, I  
25 came closest to the calculated cumulative PDSI.

1 Q. Okay. And it is still though, it is still a  
2 slightly more severe cumulative PDSI than the  
3 statistical 2% drought?

4 A. Yes. The historical period had two wetter years  
5 in there that offset.

6 Q. So for, well, let me back up and ask you this.  
7 Are the 1% exceedance and 2% exceedance droughts  
8 some of the most commonly discussed in modeling?

9 A. Yes.

10 Q. And what's the reason for that?

11 A. The 50 and 100 year droughts are just a common  
12 number. It's an arbitrary number. There is no  
13 reason why you pick a particular year. But it's  
14 a very common thing when they talk about the  
15 hundred year flood, the hundred year drought.  
16 While engineers can design systems which will  
17 meet any return interval, 1,000 year drought, it  
18 becomes very uneconomical to do that. So we can  
19 design culverts that will pass the 10,000 year  
20 flood, but if we do it will be very, very, very,  
21 very expensive. If we designed the interstate  
22 highway system to be able to travel over 10,000  
23 year events, society will probably choose not to  
24 do that. A smaller interval, where are willing  
25 to take the risk of a 1% flood or 50% flood or

1 culverts at 10% flood, one that could come every  
2 ten years, because we feel our money can be  
3 spent better places. It's a value system.

4 Q. In the course of your drought modeling work for  
5 water systems, are you frequently asked to model  
6 both the 1% and 2% exceedance droughts?

7 A. And sometimes more, yes; but 1% and 2% is most  
8 common.

9 Q. And as to both of those model droughts, the  
10 table is showing us that the modeled 1% and 2%  
11 droughts are similar to, but not exactly the  
12 same as the historical droughts of the 1930s and  
13 1950s respectively?

14 A. Yes.

15 Q. Mr. Winchester, in the white binder there is a  
16 set of documents behind the tab HCH documents,  
17 and we'll go about 40 pages back in that set.  
18 To the page that's actually numbered in the  
19 upper right Number 44 in that set of documents.

20 A. (Witness reviews documents). All right.

21 Q. For us just to be clear for the record, on the  
22 reverse of numbered Page 44 is the printed  
23 material there that is there in duplex, is it  
24 part of the document we are looking at?

25 A. No, it's not.



1 Q. And, likewise, on the reverse of Page 63 is the  
2 printed material there part of the document?

3 A. No, it's not.

4 THE HEARING OFFICER: Sorry, could you  
5 remind me where we are?

6 MR. McLEOD: The white binder in a set  
7 of documents H C H documents and we are looking  
8 at a document that's between pages numbered 44  
9 and 63 in that set. And we are cleaning up the  
10 fact that there are some duplex things that are  
11 not part of that document printed on the first  
12 and last page.

13 (City Exhibit 5 was marked for  
14 identification by the Reporter.)

15 MR. McLEOD: And I had the reporter  
16 mark that as Exhibit 5.

17 MR. ADRIAN: So is 43 not included?

18 MR. McLEOD: 43 is in, 44 is not.

19 MR. ADRIAN: And same as 63, and 64 is  
20 not.

21 BY MR. McLEOD:

22 Q. So the document that's there from numbered Page  
23 44 through numbered Page 63, Mr. Winchester,  
24 what is that document?

25 A. It's a report called A Thousand Years of Drought

1 and Climatic Variability in Kansas:

2 Implications For Water Resources Management.

3 Q. And who published that document?

4 A. The Kansas Geological Survey.

5 Q. Is this a document that you are familiar with as  
6 the result of having consulted it in your work?

7 A. Yes.

8 Q. Who was the author?

9 A. Anthony Layzell.

10 Q. And is he employed or works with the Kansas  
11 Geological Survey?

12 A. Yes. Or was at that time.

13 MR. McLEOD: Based on the Kansas  
14 Geological Survey status as a research and  
15 service division of a State's institution known  
16 as the University of Kansas, and the statutory  
17 mission of the Kansas Geological Survey to  
18 prepare their reports under the direction of the  
19 State geologist pursuant to KSA 76-322, I will  
20 formally offer Exhibit 5 as a government  
21 document.

22 THE HEARING OFFICER: Any objections?

23 MR. STUCKY: We are going to, well, we  
24 would like some foundation on the exhibit first.

25 THE HEARING OFFICER: More than what is

1 given?

2 MR. STUCKY: One thing we are unclear  
3 on is whether or not there is a file number, if  
4 this is a published report, that's one thing we  
5 are unclear on with regard to this particular  
6 report.

7 THE HEARING OFFICER: Was this a  
8 published report, is that your question?

9 MR. STUCKY: Yes.

10 BY MR. McLEOD:

11 Q. Mr. Winchester, do you know the answer?

12 A. I don't off the top of my head, the title page  
13 is missing on this, I don't know. It's  
14 available online.

15 MR. STUCKY: Our objection is if it's  
16 not a published report there is no documentation  
17 in that regard as to its validity. I don't  
18 think it could be admitted under the grounds  
19 that were offered by the City.

20 MR. McLEOD: I think that there is  
21 enough information on the document to show that  
22 its source is Anthony Layzell working under the  
23 supervision of the state geologist, and the  
24 agency name of the Kansas Geological Survey is  
25 on the first page, the first numbered page. I

1 believe that it does meet the foundational  
2 requirements for admission as a government  
3 document.

4 THE HEARING OFFICER: May I take a look  
5 at it?

6 MR. McLEOD: Yes. (Indicating).

7 THE HEARING OFFICER: Mr. Winchester,  
8 you said this is available online?

9 A. Yes, it is.

10 THE HEARING OFFICER: Are you familiar  
11 with this document being a published study  
12 through the KGS? Where online is it available?  
13 I guess what I am asking is is there a citation  
14 that could be relied upon to find it?

15 A. I see some laptops being passed back and forth.  
16 Do you have an answer to that? The answer is I  
17 don't know, I don't remember.

18 MR. McLEOD: What about from our  
19 colleagues at DWR?

20 THE HEARING OFFICER: For the record,  
21 apparently this is on the KGS website and  
22 identified as KGS open file report 2012-18.  
23 Does that resolve your concern, Mr. Stucky?

24 MR. STUCKY: I suppose so.

25 THE HEARING OFFICER: Okay. I guess

1 the objection is withdrawn.

2 MR. STUCKY: All we would ask for is we  
3 would like a copy of the cover page if we could  
4 have that. That would be helpful.

5 THE HEARING OFFICER: Mr. McLeod, would  
6 you be able to subsequently supply a cover page  
7 for that that indicates that information?

8 MR. McLEOD: Yes, we can do that.  
9 Certainly.

10 THE HEARING OFFICER: Thank you.  
11 Please proceed.

12 BY MR. McLEOD:

13 Q. Mr. Winchester, on numbered Page 3 of the  
14 report, PDSI graphs from the High Plains.

15 THE HEARING OFFICER: Pardon me, Mr.  
16 McLeod, I don't think I officially admitted  
17 that. We'll admit Exhibit 5. Sorry.

18 MR. McLEOD: My mistake, should have  
19 waited for that.

20 BY MR. McLEOD:

21 Q. Mr. Winchester, on numbered Page 3 of the  
22 report, the PDSI graphs from the High Plains  
23 aquifer would appear to show lesser impact of  
24 the 1930s drought in Divisions 8 and 9, but  
25 severe impact in Divisions 1, 4 and 7. What

1           implications of the low PDSI, and other parts of  
2           the state, have for Wichita?

3       A.    Particularly in Division 7 in the southwest  
4           corner of Kansas, because the Arkansas River  
5           comes from that area and much of the rainfall  
6           affects the stream flows downstream.  A very dry  
7           period in Division 7 would result in lower  
8           stream flows in Division 8.

9       Q.    Turning now to numbered page 4 of the report,  
10          Layzell notes:  Regression based tree ring PDSI  
11          reconstructions tend to underestimate extreme  
12          values, although dry extremes are better  
13          represented than wet extremes, but reasonably  
14          accurate in terms of extent and duration.  Does  
15          that mean that the PDSI based on tree ring data  
16          is a better tool for forecasting drought than  
17          forecasting floods?

18      A.    Yes.

19      Q.    Do you know why that is?

20      A.    Yes, because droughts are typically long term,  
21          they are soil moisture deficit issue for trees.  
22          So you can have a flood that lasts a week and  
23          the tree ring growth won't be tremendously  
24          affected by that.  Where if you have a drought  
25          that lasts multiple years, the tree rings will

1 definitely be thinner.

2 Q. At the bottom of the same page the report says:  
3 The PDSI data indicate that western Kansas has  
4 experienced more severe droughts than eastern  
5 Kansas over the past thousand years. Do  
6 droughts in western Kansas have hydrological  
7 impacts for Wichita?

8 A. Yes.

9 Q. Why is that?

10 A. Stream flow primarily, because the Arkansas  
11 River passed through southwest Kansas before it  
12 gets to the Wichita area.

13 Q. Going back to numbered Page 11 of the report  
14 there is mention at the bottom that the longer  
15 megadrought on record occurred in north central  
16 Kansas and lasted 110 years. That discussion  
17 then continues on to the next page where Layzell  
18 also notes that that megadrought was more much  
19 more severe than a 20th century drought. Would  
20 an historic 20th century drought include the  
21 dustbowl drought of the 1930s?

22 A. Yes.

23 Q. Does it follow that Layzell's observation leads  
24 to the conclusion that Kansas has experienced  
25 drought conditions much worse in duration and

1 severity than the 1930s dustbowl drought?

2 A. Yes.

3 Q. And given that the duration of that 1930s  
4 drought was the same as the duration of the  
5 statistical 1% exceedance drought. And a 24.4  
6 negative PDSI of the 1930s drought is closely  
7 similar to the -22.4 PDSI of the 1930s  
8 drought -- excuse me, but I believe, I believe  
9 that that should be the modeled 1% exceedance  
10 drought.

11 Can we conclude from Layzell's  
12 information that Kansas has experienced drought  
13 conditions much worse in duration and severity  
14 than the 1% exceedance drought?

15 A. Yes.

16 Q. Turning to numbered page 14 of the Layzell  
17 report, there is a statement that the Medieval  
18 warm period has been suggested as an approximate  
19 analog for likely future warming and drought  
20 conditions, citing Woodhouse 2010, and thus  
21 serves as an important period to investigate.  
22 What was the Medieval warm period?

23 A. The Medieval warm period was a time when there  
24 was, in North America, and in parts of Europe,  
25 temperatures were abnormally warm compared to a



1 long term average. People suspect it either  
2 occurred, well, we don't know why it happened.  
3 The current guess is it was either a lack of  
4 sun, or not a lack, a change in solar activity,  
5 a lack of volcanoes putting dust in the  
6 atmosphere, but we are not certain why.

7 Q. The discussion in the report also notes: The  
8 occurrence of several megadroughts over the  
9 medieval warm period is troubling as it suggests  
10 the climate system has the capacity to get stuck  
11 in drought-inducing modes over the Great Plains  
12 that can last several decades to a century or  
13 more.

14 A. Yes, it does.

15 Q. Turning to numbered page 15 of the report, at  
16 the end of the next-to-the-last paragraph there,  
17 Layzell again discusses differences in drought  
18 frequency in western and eastern Kansas, stating  
19 in eastern Kansas the probabilities are lower,  
20 as drought as severe as the dustbowl have only  
21 occurred about once every century. Is that  
22 observation consistent with your conclusion that  
23 the 1930s dustbowl drought approximates the 1%  
24 exceedance drought?

25 A. Yes, it is.

1 Q. Turning to Page 16 of the report under Policy  
2 and Management Implications. Layzell notes:  
3 Water systems are commonly designed to handle  
4 the drought of record identified as the most  
5 severe hydrological event from the instrumental  
6 record. For the State of Kansas the 1950s  
7 drought, 1952 through '57, remains the planning  
8 benchmark and is used to calculate reservoir  
9 yield through droughts with a 2% chance of  
10 occurrence in any one year, citing to a  
11 regulation, K.A.R. 98-5-8.

12 Although the individual years in the  
13 1950s drought may have seen more severe drought  
14 conditions than the individual years in the  
15 1930s drought, does the longer duration of the  
16 1930s drought, and it's higher cumulative PDSI  
17 suggest that it was actually a more severe  
18 drought than the 1950s drought?

19 A. For water supply systems that depend on  
20 carryover storage, yes.

21 Q. And then continuing discussion in Policy and  
22 Management Implications, does the Layzell report  
23 go on to recognize that the long term record of  
24 drought variability shows the 1930s and 1950s  
25 droughts were not unusual, and droughts of

1 greater severity and duration than the 1930s and  
2 1950s droughts have occurred in the past?

3 A. Yes.

4 Q. And then Layzell goes on to state: Such severe  
5 drought conditions are of great concern because  
6 modern day agricultural and water systems may  
7 not have the resilience to survive droughts  
8 beyond the worst-case scenario of the past  
9 hundred years.

10 If water systems plan only for the 2%  
11 exceedance drought, are they effectively  
12 planning for the worst-case scenario droughts of  
13 the past hundred years?

14 A. Statistically, no.

15 Q. And would that be because in a significant  
16 sense, because of its duration of the 1930s  
17 dustbowl drought, which approximates the 1%  
18 exceedance drought, would likely have a more  
19 severe cumulative impact due to the longer  
20 duration?

21 A. For the Wichita area, yes.

22 Q. And that reference in the report to those more  
23 severe drought conditions being of great  
24 concern, that appears to be specifically based  
25 on the problem that water systems may not have

1 the resilience to survive such droughts; is that  
2 correct?

3 A. Yes.

4 Q. Is this concern greater for a large municipal  
5 system than it would be for a small one?

6 A. Yes.

7 Q. Why is that?

8 A. So, for example, Wichita is the largest city in  
9 Kansas. And so it has, for example, the largest  
10 hospital in Kansas, and it has a large military  
11 base. And it has a denser area of housing. One  
12 example would be where you have more apartments,  
13 those people have less ability to reduce their  
14 per capita use than a city that where everyone  
15 has a full size lot with a house. Those people  
16 can cut back, for example, in severe drought can  
17 say we will ban outdoor watering, sorry, your  
18 lawns going to die. In a place like Wichita  
19 with a denser population, there is less ability  
20 to provide temporary drought conservation. And  
21 the services that are provided in their largest  
22 airport in the state, it's the impacts of  
23 shutting down, for example, the Wichita Airport  
24 would be much larger than for a small regional  
25 airport.

1 Q. Turning to Page 17 of the Layzell report. In  
2 the middle paragraph the report says: Woodhouse  
3 and Overpeck highlight two factors that may  
4 compound the susceptibility of the Great Plains  
5 to future drought. Increased vulnerability due  
6 to land use practices, specifically the use of  
7 irrigation to bring marginal lands in to  
8 agricultural production; and, two, the enhanced  
9 likelihood of drought due to global warming. As  
10 the reports references the medieval warm period,  
11 does that paragraph reflect Layzell's concern  
12 that severe droughts may become increasingly  
13 common in the Great Plains with a consequence of  
14 global warming?

15 A. Yes.

16 Q. Does the Layzell report also recognize that  
17 certain factors present challenges to effective  
18 water resource management including, one,  
19 current levels of uncertainty in predicting  
20 future drought occurrence; and two, the  
21 assumption of climatic stationarity by water  
22 resource planner; and, three, competing  
23 management interests?

24 A. Yes.

25 Q. In simple terms, what is meant by that

1 assumption of climatic stationarity by water  
2 research planners?

3 A. Stationarity in this context means that the past  
4 represents the future. So if we look at the  
5 stream low records of Wichita, the Arkansas  
6 River, the stream flow that we have seen in the  
7 past nine years represents what will happen in  
8 the future. And as we look at longer term  
9 records we believe that the gauge record of the  
10 past does not represent the long term  
11 variability; and, therefore, we are perhaps  
12 exposed to larger risks than we would otherwise,  
13 if all we did is look at the gauge record.

14 Q. Then Layzell ultimately concludes on Page 17 a  
15 discussion, and indeed, his entire report with a  
16 statement: Given these challenges, it would be  
17 wise to adopt a problematic approach to drought  
18 forecasting and planning that incorporates the  
19 full range of drought variability indicated in  
20 the paleoclimatic record.

21 Does this indicate the planners would  
22 be wise to evaluate and plan for potential  
23 drought occurrences shown by the paleoclimatic  
24 record, rather than focusing only on the most  
25 severe drought of instrumental record?

1 A. Yes.

2 Q. And would an example be a consideration of the  
3 1% exceedance drought which combines using PDSI  
4 because there are not hundred years of extreme  
5 gauge records near Wichita?

6 A. Yes.

7 Q. In the course of your own work for the city, did  
8 you recommend that planning be done with some  
9 minimal amount of storage held in reserve to  
10 guard against a drought with an exceedance  
11 probability of less than 1%?

12 A. I believe I did, but I don't recall an amount.

13 Q. Find a blue tab in that white binder.

14 MR. McLEOD: It's a document which I am  
15 handing the reporter to mark as Exhibit 6.

16 (City Exhibit 6 was marked for  
17 identification by the Reporter.)

18 BY MR. McLEOD:

19 Q. Mr. Winchester, are you familiar with this  
20 document we have marked as Exhibit 6?

21 A. Yes.

22 Q. Is this an article which shows it was published  
23 in the Bulletin of the American Meteorological  
24 Society in 1998 the same work by Woodhouse and  
25 Overpeck that was cited several times as a

1 reference stating statements in the Layzell  
2 report in the Kansas Geological Survey?

3 A. Yes.

4 Q. Does this paper appear to you to be a reliable  
5 authority on drought reconstruction modeling and  
6 analysis using information from the  
7 paleoclimatic record?

8 A. Yes.

9 MR. McLEOD: I offer the exhibit for  
10 admission.

11 THE HEARING OFFICER: Any objections?  
12 Hearing none, Exhibit 6 will be admitted.

13 BY MR. McLEOD:

14 Q. Turning about 17 pages in to the exhibit, to the  
15 page which is numbered, Page 2710 of the  
16 Woodhouse and Overpeck article, the authors say:  
17 The paleoclimatic data suggest a 1930s magnitude  
18 dustbowl drought occurred once or twice a  
19 century over the past 300 to 400 years, and a  
20 decadal-length drought once every 500 years. Is  
21 there observation with respect to the frequency  
22 of a 1930s magnitude dustbowl drought consistent  
23 with your use of the 1930s drought as an  
24 approximation of the 1% exceedance drought?

25 A. Yes, it is.



1 Q. Shifting gears now to turn to the topic of  
2 computer modeling. The experience shown in your  
3 resume included experience with the use of a  
4 model called RESNET, and also specific work on a  
5 project to develop a MODSIM model of the City of  
6 Wichita's well water system to evaluate  
7 potential water supply alternative. What is  
8 RESNET?

9 A. RESNET is called a circulating network model  
10 that's used to simulate, you can use it for any  
11 sort of water resources planning, but typically  
12 municipal work was developed by Burns &  
13 McDonnell or an employee of Burns & McDonnell.

14 Q. Is there any relationship between that RESNET  
15 program and the MODSIM model that you worked  
16 with?

17 A. Yes. My understanding is Gene Foster, who  
18 worked at Burns & McDonnell, was a student under  
19 John Labadie at Colorado State University. And  
20 at the Dr. Labadie was enhancing, well, he  
21 actually got the model from the Texas Water  
22 Development Board, he was enhancing it and was  
23 providing students with copy of a source code.  
24 Gene Foster got a copy of that source code and  
25 used it as a sister or a daughter model.

1 Q. And the source code that he got was from what  
2 model program?

3 A. I am not sure of the name for it. I know it  
4 came from the Texas Water Development Board.

5 Q. Do you know if it was a version of the MODSIM?

6 A. MODSIM was based on that earlier work.

7 Q. Did that also come to be true of RESNET then?

8 A. Yes.

9 Q. I think the environmental impact statement for  
10 the proposal is there with the proposal, already  
11 admitted as part of Exhibit 1, in the black  
12 binder.

13 A. (Witness reviews documents).

14 Q. I am sorry. It might actually be in the white  
15 binder. Looking for the document in the white  
16 binder, behind an orange tab marked ASR  
17 Environmental Impact Statement.

18 MR. McLEOD: Let's mark that as Exhibit  
19 7.

20 (City Exhibit 7 was marked for  
21 identification by the Reporter.)

22 BY MR. McLEOD:

23 Q. On the front page of that document, Mr.  
24 Winchester, can you determine whether this  
25 document is a document of the U.S. Department of

1 the Interior Bureau of Reclamation?

2 A. That's what's on it.

3 MR. McLEOD: I will offer that  
4 document, and its attachments, as U.S.  
5 Department of the Interior Bureau of  
6 Reclamation.

7 THE HEARING OFFICER: Any objections?

8 MR. STUCKY: I will object. This  
9 document isn't mentioned in Mr. Winchester's  
10 expert opinion, and he doesn't offer any opinion  
11 based on what's on this particular document.  
12 Although I am not necessarily objecting to this  
13 document maybe being used in a later witness, I  
14 am objecting to Mr. Winchester testifying to  
15 what's in this document. It's not mentioned in  
16 his report and nothing in the subject matter  
17 even falls within that exhibit.

18 MR. McLEOD: I think there are modeling  
19 issues within the scope of Mr. Winchester's  
20 report. And the intent would be I am asking of  
21 this document really to ask him a few limited  
22 questions about what the document shows in terms  
23 of results from the RESNET model having been  
24 submitted to and accepted by the Bureau of  
25 Reclamation in the course of this Environmental

1 Impact Statement.

2 THE HEARING OFFICER: Within that  
3 limited scope do you still object?

4 MR. STUCKY: We'll allow it.

5 THE HEARING OFFICER: Okay. Exhibit 7  
6 will be admitted.

7 BY MR. McLEOD:

8 Q. Mr. Winchester, going back in the exhibit to the  
9 Appendix A on hydrology, have you seen that  
10 appendix before?

11 A. (Witness reviews documents). Yes.

12 Q. And the first paragraph of that appendix says,  
13 it refers to the RESNET name as coming from the  
14 reservoir network. It says: The model performs  
15 a daily simulation of reservoirs and streams as  
16 a circulating network and uses least cost  
17 optimizing procedures to arrive at an optimized  
18 solution.

19 Is that an accurate general statement  
20 of the program's general function?

21 A. Yes.

22 Q. This page also shows that if you put in a set of  
23 the required general data set for an 85 year  
24 model simulation period, the model would  
25 calculate a daily water balance and the

1 resources needed for the water supply system  
2 that period. As far as having the capability  
3 within that model to identify a 1% drought would  
4 that 85 year simulation period be too limiting?

5 A. To determine whether or not it was 100 year  
6 drought, yes.

7 Q. Why would that be?

8 A. There would not be hundred years of data  
9 available.

10 Q. And then based on your recollection from  
11 previous reviews of that appendix, does the rest  
12 of the information there in the appendix say,  
13 basically consist of model simulation in a  
14 series of attachments providing information to  
15 the Bureau of Reclamation, that they had  
16 requested, to further document the development  
17 of that RESNET model, the aquifer stream,  
18 gain-loss table, development of historic  
19 discharge and historic evaporation from the  
20 Cheney Reservoir?

21 A. Yes.

22 Q. Mr. Winchester, in addition to your work to  
23 model the PDSI characteristics of a 1% and 2%  
24 drought, did the City of Wichita also retain  
25 your firm to evaluate the RESNET model used to

1 simulate various well water supply projects?

2 A. Yes.

3 Q. Did the scope of that work also include model  
4 documentation and training of city staff so they  
5 could assume the function of operating the model  
6 to evaluate future supply alternatives and  
7 conservation initiatives?

8 A. Yes.

9 Q. In the course of discussing the proposed  
10 modifications to RESNET, city staff, did you  
11 become aware that there were issues with the  
12 user interphase features of RESNET such that the  
13 RESNET model initially proposed might not be  
14 sufficiently user friendly, and would be  
15 difficult for the city staff to use?

16 A. Yes.

17 Q. As the result of that, did you recommend an  
18 alternative approach to using a modified RESNET  
19 program?

20 A. Yes.

21 Q. What was that approach?

22 A. So we offered to the City that the RESNET model  
23 that they were using essentially had no user  
24 interphase. So you had to be a programmer to  
25 modify things like pipeline sizes or reservoir

1 capacities. And we suggested to them that they  
2 look at other model engines and we provided  
3 several. They ended up choosing the MODSIM  
4 model, which is available from Dr. John Labadie  
5 at State Colorado University.

6 Q. And in that sense they approved your  
7 recommendation?

8 A. They actually chose it; but, yes.

9 Q. Was part of your work for the City to recreate  
10 and verify the data in RESNET for use in MODSIM?

11 A. Yes.

12 Q. Were you supposed to transfer the data from  
13 RESNET in to MODSIM and then test and replicate  
14 to see if the results were similar?

15 A. Yes.

16 Q. After conversion of the RESNET model to MODSIM  
17 DSS, did you test that MODSIM DSS model to  
18 verify that it would replicate the RESNET  
19 results, at least to the point that the results  
20 of the two models would be the same for  
21 practical purposes, if not identical?

22 A. Yes.

23 Q. Did you also remove from the model those  
24 features that did not actually correspond to  
25 existing features of the City system and adjust

1           some data on system capacities to conform the  
2           actual system capacities?

3       A.    Yes.  The RESNET model had some alternatives for  
4           water supplies that the City no longer felt were  
5           necessary, so we did not include those in the  
6           new model.

7       Q.    So that part would have been just a  
8           simplification of the model?

9       A.    Yes.

10      Q.    Did anyone peer review the converted model?

11      A.    Yes.

12      Q.    And who?

13      A.    It was Burns & McDonnell, who was the company  
14           that developed the RESNET model.  So they were a  
15           very reliable authority to do that.

16      Q.    What sorts of simulations does the MODSIM DSS  
17           model now enable the City to run?

18      A.    So the MODSIM model now has been used for two  
19           primary purposes.  The first was to look at  
20           different alternatives, water supply  
21           alternatives.  So, for example, in the City's  
22           plumbing system are there limitations that could  
23           be overcome by there upsizing pipes or providing  
24           more storage.  If you added water supply from  
25           some new source, would that cover a shortage in



1 the area. And the second was to look at this  
2 long term, the longer term drought.

3 Q. Please turn in the black binder to the proposal,  
4 which has been admitted as Exhibit 1. And  
5 within that document to Page 2-4 within the  
6 proposal. Is the screen graphic shown there one  
7 of the regular user interphase features of the  
8 MODSIM DSS model?

9 A. Yes.

10 Q. And does that graphic depict for the user both  
11 the resources of the system and environmental  
12 factors, such as river losses, that are  
13 impacting those resources?

14 A. Yes, it does.

15 Q. Does the model calculate extreme gains and  
16 losses from and to the adjacent aquifers as the  
17 result of modeled conditions?

18 A. Yes, it does.

19 Q. Do you recall, based on the information that you  
20 had at the time, does the Equus Beds aquifer  
21 contribute water to the Little Arkansas River at  
22 all elevations?

23 A. Yes, it does.

24 Q. And is its contributonal receipt of water from  
25 the Big Arkansas River dependent upon varying

1 groundwater elevations?

2 A. Yes.

3 Q. After you had constructed the MODSIM DSS model,  
4 tested it against RESNET, and conformed it to  
5 the actual features and capacities of the City's  
6 system, did you also then use the model to  
7 generate simulations to evaluate how various  
8 water supply alternatives might impact system  
9 yield to the 1% and 2% design droughts?

10 A. Yes, I did.

11 Q. In your baseline simulations, that is, those  
12 simulations with existing features and  
13 capacities, with the 1% and 2% droughts, what  
14 did the results show in terms of whether and  
15 when there would be likely shortages?

16 A. In a broad sense for future demands, we found  
17 that there were twenty constrictions within the  
18 City's system where it would not be able to meet  
19 peak demands.

20 Q. So the issues generally occurred at peak day  
21 demand times in the modeling?

22 A. Depending on the demand level you put in the  
23 model, yes.

24 Q. Do you recall what it looked like using 72,000  
25 acre feet of demand, what the results looked

1           like?

2       A.    I remember that we modeled up to the point where  
3           there was not a shortage, and it may be 72,000,  
4           and then the next step up is 73,000.  I don't  
5           remember what the cut off was, but when you took  
6           the next step in to, that the higher level of  
7           demand you would see individual days in the  
8           period of record we were using, where the model  
9           could not meet the demand.

10       Q.   But those shortages, again, those would have  
11           been on peak days, limited in duration, in your  
12           opinion maybe of such a limited extent they  
13           could have been avoided by demand management?

14       A.    Yes.  Those shortages were single day events.  
15           We used the same demand pattern every year and  
16           repeated it throughout the period of record.  
17           And so there was one day that had the highest  
18           demand, and the shortage happened on just that  
19           one day.  So, yes, if the City knew, wow, it is  
20           going to be really hot tomorrow, they could say  
21           no outdoor lawn watering to get through that  
22           peak period.

23       Q.    For purposes of the 1% drought scenarios how was  
24           the model adjusted?

25       A.    So the data that came from RESNET had the longer

1 period of record during the twenties through  
2 what was current at the time. When you are  
3 looking at a critical period, like a 1% drought,  
4 you don't need to model all eight years and  
5 spending the computer time waiting for it to go.  
6 So we put in a ten-year period of record up for  
7 the 1% of the 1930s and just ran that to make  
8 our analysis. So I suppose to answer your  
9 question more precisely, we removed later years  
10 after the 1930s through the present. Used to be  
11 the whole creative record and we just simulated  
12 for the 1% drought just the '30s essentially.

13 Q. In terms of the training that was a function of  
14 that engagement, were city staff able to  
15 successfully complete the training and assume  
16 future operation of the MODSIM model?

17 A. Yes. As part of that I came to the City of  
18 Wichita and spent nearly a week here training a  
19 minimum of two other staff members on how the  
20 model was constructed and how to make runs using  
21 various assumptions increasing pipe sizes or  
22 reducing storage, whatever you wanted to. And  
23 then I provided about a year and a half of  
24 technical support remotely from Boulder.

25 Q. And did city staff continue to consult with you

1 for review of their MODSIM DSS modeling of the  
2 1% drought scenarios that were generated in  
3 support of the proposal?

4 A. Yes, they did.

5 Q. Mr. Winchester, if you would turn in the  
6 proposal to section 2.3, which is captioned,  
7 Integrated Water Resources Management During the  
8 1% Drought using MODSIM DSS. Take a moment to  
9 review that.

10 A. (Witness reviews documents). All right.

11 Q. In your opinion is the information that is  
12 stated in that section of the proposal stated  
13 accurately?

14 A. Yes.

15 MR. STUCKY: Wait a minute. I will  
16 object to that one. That's grossly leading. We  
17 don't even know what we are referring to as far  
18 as whether or not it is accurate. I am not  
19 clear, I guess, from the question if we could  
20 rephrase it.

21 MR. McLEOD: I think that any witness  
22 can look at a paragraph or section of a text,  
23 Your Honor, and say whether they believe that  
24 factually it is set forth accurately. I don't  
25 know that that's leading at all.

1 MR. STUCKY: But what paragraph we are  
2 referring to? That's my question.

3 MR. McLEOD: We are referring to the  
4 section of the proposal 2.3, Integrative Water  
5 Resources Management During a 1% drought.

6 MR. STUCKY: And the question is  
7 whether or not this entire section is accurate?

8 MR. McLEOD: Yes. In the witness'  
9 opinion.

10 MR. STUCKY: All right.

11 THE HEARING OFFICER: I am sorry, are  
12 you --

13 MR. STUCKY: We'll withdraw, if we are  
14 afforded the same type of leniency when we  
15 present our testimony, understanding that  
16 hopefully will be the case, we'll withdraw the  
17 objection.

18 MR. McLEOD: And I don't have further  
19 questions for this witness.

20 THE HEARING OFFICER: Okay. It's about  
21 11:00 o'clock. We have gone two hours. Before  
22 we move in to the next questioning would  
23 everyone be agreeable to about a ten minute  
24 break? Let's go off the record. We'll be back  
25 in about ten minutes.

1 (REPORTER'S NOTE: At this time,  
2 11:00 a.m., a recess was taken, after which,  
3 11:15 a.m., the following proceedings were  
4 held:)

5 THE HEARING OFFICER: We are back on  
6 the record. It is 11:15. And I believe we are  
7 in cross examination from Mr. Winchester. I  
8 think the order was going to be DWR next. So  
9 shall we move the mic over to you?

10 MR. OLEEN: DWR has no questions.

11 THE HEARING OFFICER: That's great.  
12 Groundwater management, you are next.

13 CROSS EXAMINATION

14 BY MR. STUCKY:

15 Q. All right. Mr. Winchester, I am going to walk  
16 through some of the aspects of your testimony  
17 from just a moment ago. And we are going to  
18 start out with the beginning of your testimony.  
19 You talked about the Palmer Drought Severity  
20 Index; is that correct?

21 A. Yes.

22 Q. Now, with respect to the Palmer Drought Severity  
23 Index, why was that originally developed? Was  
24 it developed because there was concerns with  
25 data variability of other models that had been

1           used previously? Was that part of the reason it  
2           was developed?

3       A.    I believe it was the first to actually develop  
4           those that had the ability to look at droughts  
5           in a long term in a uniform way.

6       Q.    Isn't it true that one of the critiques of the  
7           Palmer Drought Severity Index is the fact that  
8           it's based on approximation; is that correct?

9       A.    Yes.

10      Q.    And another critique of the Palmer Drought  
11           Severity Index is the fact that there is an  
12           inability to standardize some of the data; is  
13           that correct? Or standardize some of the  
14           results? Is that another critique of it?

15      A.    Could you talk more about standardize?

16      Q.    Well, I guess it goes hand in glove with the  
17           approximation. It's just making projections or  
18           approximations over time. In fact, there is  
19           critiques that the data, because of that, isn't  
20           as reliable, is that true?

21      A.    It's certainly not perfect.

22      Q.    Okay. Now, would you say that there is aspects  
23           of the Palmer Drought Severity Index that are  
24           arbitrary in nature?

25      A.    There probably are.



1 Q. Can you tell me some of those aspects of the  
2 Palmer Drought Severity Index that are  
3 arbitrarily in your view?

4 A. One would be that while it was developed for the  
5 entire continent of the United States, parts of  
6 North America, those do not all have the same  
7 historical instrumental record. So you are  
8 comparing in different parts of the country with  
9 longer periods of record versus the shorter  
10 periods in other parts.

11 Q. So one issue with this index is we have perhaps  
12 good data in perhaps the eastern United States  
13 and perhaps not as good as data in the midwest,  
14 would that be an accurate statement?

15 A. If you mean by good, you mean period of record,  
16 it's probably not so much a period of record as  
17 it is a density of record.

18 Q. The density of record is not as good as in the  
19 midwest, is that a true statement?

20 A. That could be a true statement.

21 Q. Now, along the lines of our data points where we  
22 indicate we have more data out in the east and  
23 there is less data in the midwest, would that be  
24 a true statement?

25 A. I have never looked at that, I don't know.

1 Q. Well, let me ask you this, aside from a  
2 nationwide analysis of it, if you look at the  
3 Palmer Drought Severity Index as it applies to  
4 different regions, there is variables and that  
5 would skew the results as you go from one  
6 region, like a mountainous region to a plains  
7 region; is that correct?

8 A. I don't know that I would use the word skew, I  
9 would say affect.

10 Q. It would make the results different depending on  
11 the region you are in; is that correct?

12 A. It could.

13 Q. Okay. For example, the drought, the Palmer  
14 Drought Severity Index doesn't really take into  
15 account snow or ice very well, does it?

16 A. That's correct.

17 Q. And so, for example, if we had a major event  
18 where it's snowing or there is ice, that  
19 wouldn't be taken into account, is that true?

20 A. It might not be.

21 Q. Okay. But it could be true, correct?

22 A. It could be true.

23 Q. So, for example, as we are applying the Palmer  
24 Drought Severity Index to the midwest, for  
25 example, and we have a cold winter with a lot of

1 snow and ice in a particular winter and it all  
2 melts suddenly, the Palmer Drought Severity  
3 Index may not account for that very well, is  
4 that true?

5 A. That's correct.

6 Q. Now tell me, does the Palmer Drought Severity  
7 Index take into account evapotranspiration?

8 A. Indirectly, yes.

9 Q. How does it take that into account?

10 A. So the Palmer Drought Severity Index is  
11 basically a soil moisture, basically calculating  
12 soil moisture and it looks at both the  
13 contributions from precipitation and then  
14 depletions from, it could be infiltration of  
15 deep groundwater, it could be loss through  
16 evaporation or transformation through plants.

17 Q. So that's just an indirect correlation, is that  
18 true?

19 A. It's one of the inputs used in the model, yes.

20 Q. Now, one other critique of the Palmer Drought  
21 Severity Index is the fact it doesn't take into  
22 account recharge rates, is that a true  
23 statement?

24 A. Recharge from what?

25 Q. Recharge from water.

1 A. From surface water or groundwater?

2 Q. Surface water.

3 A. So infiltration, for example, rain events?

4 Q. Correct.

5 A. I believe that's not correct.

6 Q. Explain what you mean by that.

7 A. I mean that has, has a methodology for  
8 calculating soil moisture, it includes  
9 contributions to the soil moisture from  
10 precipitation.

11 Q. But if there was a major flood event, for  
12 example, it wouldn't do a good job from taking  
13 that into account; is that correct?

14 A. It depends on the time scale it's calculated on,  
15 but there is a chance it could miss that, yes.

16 Q. And so if the recharge events were either sudden  
17 or slow, depending on the nature of it, it may  
18 not accurately account for that, is that a true  
19 statement?

20 A. Probably, yes.

21 Q. Okay. And one other critique of the Palmer  
22 Drought Severity Index is the fact that it just  
23 relies on the available data; is that right?

24 A. Yes.

25 Q. And so it's only as good as the data that it's

1 based on, is that true?

2 A. That is one limitation, yes.

3 Q. Now, one, or another question with respect to  
4 that, does the contour of the land, does that,  
5 does that affect the implications of the Palmer  
6 Drought Severity Index?

7 A. I am not familiar enough with the calculations  
8 to know that.

9 Q. And so as you are sitting here today, if I were  
10 to ask you questions based on the contour of the  
11 land in western Kansas, for example, versus the  
12 contour of the land in this area, you wouldn't  
13 have an opinion on that; is that correct?

14 A. I would not have an opinion, correct.

15 Q. And let's, let's actually jump to Exhibit 2,  
16 which was your CV. Okay?

17 A. (Witness reviews documents). All right.

18 Q. Now, in your CV you, which is long and has a lot  
19 of detail to it. Is there anything that  
20 indicates that you have analyzed stream flows?

21 A. Certainly.

22 Q. Tell me what you have done to analyze stream  
23 flows.

24 A. To keep time from escaping through our fingers,  
25 what specifically are you looking for?

1 Q. Well, for example, have you analyzed stream  
2 flows in specifically western Kansas, in the Big  
3 Arkansas River? In fact, there is nothing in  
4 your resume that indicates you have done such  
5 research; is that correct?

6 A. Well, it's under the, this resume is divided in  
7 to two areas. It's both a broad topic area,  
8 water rights, water research, modeling; and then  
9 in the back there are specific cases. And in  
10 the work I have done for the City of Wichita,  
11 yes, I have looked at available stream flow,  
12 long term available stream flow data in western  
13 Kansas.

14 Q. Would you consider yourself an expert on stream  
15 flow events in western Kansas?

16 A. It depends on the context.

17 Q. Explain what you mean by that.

18 A. If you are talking about things like flood  
19 events, no, I have not been retained to look at  
20 those. If you are talking about drought, long  
21 term drought as it could be indicated by stream  
22 flows, then, yes, I have been. That's why I am  
23 here.

24 Q. And let me just ask a little more detail on  
25 that. Do you have any expertise on the events

1           that would impact a stream flow as a river  
2           starts in western Kansas and as it travels  
3           across the state? Would you have any expertise  
4           on the events that would impact that stream  
5           flow?

6        A.    I would go farther than that and say all the way  
7           to Colorado, the headwaters of the Arkansas.

8        Q.    What is your expertise in that regard?

9        A.    So I am a water rights opinion for Colorado  
10           Springs, I do their water right opinion hearing  
11           when they go to trial, and they have water  
12           rights from the headwaters of the Arkansas down  
13           to essentially John Martin.

14       Q.    Does the Big Arkansas River, for example,  
15           generally flow in western Kansas?

16       A.    At times.

17       Q.    How often?

18       A.    I would have to go back and look at that. It's  
19           been a long time since I looked at it.

20       Q.    Would you say over half of the time? Would you  
21           say under half the time?

22       A.    I think it depends where you are looking at.  
23           From Colorado's perspective certainly the  
24           threshold is at Garden City.

25       Q.    So an extreme, so what you mean by that is that

1 west of Garden City it more rarely flows, is  
2 that what your opinion is?

3 A. I think it depends more on the specific  
4 circumstance you are looking at. I think, well,  
5 I know that that the compact delivery  
6 requirements have been in dispute in the past  
7 between Colorado and Kansas. But if you want me  
8 to look at, well, refresh my memory so I can  
9 speak accurately to that, I am glad to do that;  
10 but I don't have that off the top of my head.

11 Q. The answer is you don't know how often it flows,  
12 would that be a true statement?

13 A. I don't recall at this time.

14 Q. Now, also on Exhibit 2 in your CV, you mention a  
15 number a lot of analysis you have done with  
16 respect to drought, and things of that nature.  
17 Tell me, besides this particular case, when have  
18 you analyzed the impact of a drought on an  
19 aquifer other than this case?

20 A. Earlier this year we built a water supply model  
21 for Steamboat Springs, Colorado where part of  
22 their water supply, like Wichita's, comes from  
23 surface water storage and part of it comes from  
24 groundwater development. We look at the  
25 implications of low precip on that aquifer and



1           how it would be affected by that. Before that  
2           we have looked at, we are water resources  
3           modeling engineers for the City of Aurora,  
4           Colorado. Aurora is the third largest  
5           municipality in the State of Colorado, very  
6           similar size to the City of Wichita, it's about  
7           375,000 people. We have a model there that  
8           covers three basins, Colorado, South Platte, the  
9           Arkansas, and we looked at groundwater levels in  
10          that model, they have, not really ASR, reused  
11          project, take water off the river below their  
12          waste water plant, pump it up and retreat it in  
13          to potable water. So that has been an ongoing  
14          client of mine since the year 2000.

15        Q. I would like you to flip to Exhibit 3, if you  
16          would.

17        A. Remind me which one that was.

18        Q. It's the drought reconstruction for the  
19          Continental United States is the title of that  
20          exhibit. It's the yellow tab I think in the  
21          white notebook.

22        A. (Witness reviews documents). All right.

23        Q. I want you to start by flipping to the first  
24          page of that particular exhibit.

25        A. All right.

1 Q. Now, in the introduction it's identified as  
2 several droughts; is that correct, that have  
3 occurred in the continental United States?

4 A. Yes.

5 Q. And it indicates, for example, a drought in  
6 Texas. Is that right?

7 A. You are referring to 1950s in Texas?

8 Q. Yes.

9 A. Yes.

10 Q. And then it talks about at the end of that  
11 opening paragraph it says: In the 1930s in the  
12 northern Great Plains; is that right? Is that  
13 what it states?

14 A. Yes.

15 Q. So, in other words, is what this article is  
16 saying that the 1930s drought mainly affected  
17 the northern Great Plains, is that what this is  
18 saying?

19 A. I don't think it says that.

20 Q. What is meant by northern Great Plains in this  
21 article then?

22 A. It says in the 1930s in the northern Great  
23 Plains, but it doesn't actually talk about the  
24 rest of the Great Plains.

25 Q. Well, my question I guess is then, is it true

1           that that drought was more severe in the  
2           northern Great Plains than it was in the  
3           southern Great Plains?  Would that be a true  
4           statement?

5   A.    I don't know if it's true, it could be implied  
6           from this.

7   Q.    And as you are sitting here today you don't have  
8           knowledge on that particular subject?

9   A.    I know the droughts of the '30s and '50s  
10          affected different parts of Kansas differently.

11   Q.    I want to flip to actually 1147, Page 1147 of  
12          that article.

13   A.    Yes.

14   Q.    Now, on 1147 there is a map; is that right?

15   A.    Yes.

16   Q.    And that shows tree ring analysis that's  
17          occurred; is that right?

18   A.    Yes.

19   Q.    Now, just so I am clear, the points on that  
20          particular map show where tree ring analysis  
21          occurred, is that a true statement?

22   A.    Yes.

23   Q.    Now, is it also a true statement there is no  
24          points for the tree ring analysis that occurred  
25          in Kansas?  Would that be a true statement?

1 A. On that map, correct.

2 Q. Now, let's go to the PDSI grid on the previous  
3 page for drought reconstructions. You said that  
4 there were six points for Kansas?

5 A. Yes.

6 Q. And there is three points that would be in the  
7 northern half of Kansas, is that a true  
8 statement?

9 A. Yes.

10 Q. And then there are three points that would be on  
11 the extreme southern border of Kansas, is that a  
12 true statement?

13 A. In this picture, that's correct.

14 Q. Now, you indicate that your analysis is based  
15 off of that extreme point in the southwest  
16 portion of Kansas. I just want to make sure I  
17 understand your testimony.

18 A. Deciding which years to use for the 1%, 2%  
19 droughts were based on that, the point in the  
20 southwest corner of Kansas, yes.

21 Q. And I guess I am unclear, once again, why you  
22 decided to selectively choose that area for your  
23 drought reconstruction.

24 A. I was retained to create, or create or revise an  
25 updated model for the City of Wichita. And the

1 inputs for the Equus Bed aquifer portion of that  
2 come from a USGS MODFLOW model, which is much  
3 better representing what goes on in the aquifer.  
4 In the MODFLOW model it is represented fairly  
5 simplistic. Which means most of the MODFLOW  
6 model relies on stream flow. The gauge stream  
7 flow record we have, that affects the Wichita  
8 area, is best correlated, in other words, it's  
9 best reproduced, by the data that comes from the  
10 southwest corner of Kansas than any of the  
11 surrounding dots.

12 Q. Now, just so I am clear though, isn't there a  
13 difference between stream flow variability in  
14 western Kansas as opposed to eastern Kansas,  
15 there would be differences in the stream flow in  
16 those regions; is that correct?

17 A. Yes.

18 Q. And wouldn't that change some of the analysis,  
19 if you are trying to apply stream flow data in  
20 western Kansas, to let's say eastern Kansas,  
21 that would change the analysis, would it not?

22 A. So as we talked about, we looked at finding the  
23 best fit to the PDSI data we have with the  
24 historical stream flow record. So that when we  
25 went back in time and used the part of PDSI data

1 we could not confirm, because there is no  
2 historical gauge record, we would be as certain  
3 as we could be it was the best representation.  
4 So stream flow around the Wichita area is most  
5 reflected by the PDSI data in southwest Kansas.  
6 Is it identical, no? I mean, they are not  
7 identical things. But it is the best  
8 representation statistically, it is the best  
9 representation we have.

10 Q. Has development over the years in areas such as  
11 where the rivers are in western Kansas, has  
12 development impacted the analysis with regard to  
13 the drought calculations?

14 A. I don't think it's the answer you are looking  
15 for, but the answer to your question is no.

16 Q. So, in other words, you are saying that if we go  
17 back to the 1920s and there is no irrigation in  
18 western Kansas and then we fast forward and  
19 there is a bunch of irrigation, for example, in  
20 western Kansas, you are telling us, and those  
21 pivots are right by the river, you are saying  
22 that's not going to impact the analysis?

23 A. That's not what I said. I answered your  
24 question.

25 Q. So if we take development to mean, for example,

1 the drilling of water wells, does that impact  
2 the analysis?

3 A. The analysis of PDSI?

4 Q. Yes.

5 A. No.

6 Q. Does it impact the analysis that you did?

7 A. In some ways, certainly.

8 Q. And tell me how.

9 A. Development of upstream water is going to  
10 change, development of upstream groundwater will  
11 likely change the timing and amount of water  
12 passes stream flow gauges down here to Wichita.  
13 And that can either decrease flows, at certain  
14 times of the year; or for your example was, you  
15 put a well in with a pivot and you irrigate, it  
16 could also increase flows at other times of the  
17 years due to return flows.

18 Q. Let's go ahead and flip to Exhibit 4. And  
19 that's the document that was titled Northern  
20 American Drought Reconstructions.

21 A. By Cook?

22 Q. By Cook. I believe you said, and I want to make  
23 sure I heard your testimony correctly. I think  
24 you said that sudden precipitation would not be,  
25 could not accurately be accounted for in all

1 events; is that correct? Is that what you glean  
2 from this article?

3 A. May not be, yes.

4 Q. And, in fact, could sudden precipitation events,  
5 as we apply that to the Palmer Drought Severity  
6 Index, could that skew some of the results of  
7 the analysis?

8 A. Yes.

9 Q. I think you also said that as you analyzed this  
10 particular article there is a bias toward the  
11 severity of a drought occurring. Is that what  
12 you said?

13 A. I don't believe that was in this article, no.

14 Q. Let's flip to Exhibit 5 then. Let's flip to  
15 Page 3 of Exhibit 5.

16 A. These notebooks aren't tabbed by Exhibit Number.  
17 Can you tell me what that is.

18 Q. Yes. It's a A Thousand Years of Drought and  
19 Climatic Variability in Kansas under Exhibit 5,  
20 I believe.

21 A. (Witness reviews documents). 2012 by Anthony  
22 Layzell?

23 Q. Yes.

24 A. All right.

25 Q. I ask that you flip to Page 3.



1 A. All right.

2 Q. You analyzed some of the data in Division 7 and  
3 you spoke to that in southwest Kansas. Is that  
4 true? You spoke to that in your testimony?

5 A. Yes.

6 Q. My question is, with respect to that data in  
7 southwest Kansas, does that take into account  
8 the stream flow when the river would run dry?

9 A. So my use was purely on historical records. So  
10 if there were dry periods in that record, yes.

11 Q. I am just going to ask you a few general  
12 questions about tree ring chronology. With  
13 respect to tree rings, would it be a true  
14 statement that at best to try and predict a  
15 drought based on tree rings these are  
16 guesstimates; is that right?

17 A. Well, they are calculated numbers. There is  
18 certainly room for both natural and mechanical  
19 processing errors or biases, yes.

20 Q. So, in other words, with respect to a tree ring  
21 analysis, it's not the same as measuring a water  
22 gauge or something of that nature; is that  
23 correct?

24 A. Well, I don't know that I would say that.  
25 Measuring a water gauge is also, in your words,

1 a guesstimate. It's not a precise science.

2 Q. I understand that. But would you also  
3 acknowledge that trying to analyze tree rings  
4 from like the 1600s would not be as precise  
5 science as measuring, for example, current well  
6 data. Would that be a true statement?

7 A. Well data, that would be a true statement.

8 Q. And, in fact, if you look at some of the  
9 articles that you quoted that talk about tree  
10 rings it says that the data suggests, over and  
11 over in the articles. Would that be an accurate  
12 statement to indicate that these are just  
13 suggestions, they are approximations of what we  
14 can speculate from the tree rings, is that what  
15 that means?

16 A. They are approximations, yes.

17 Q. Now, you mentioned that in the 1880s the  
18 measurements that they took to try and measure  
19 drought and water, at that point, that the data  
20 was pretty variable, is that true?

21 A. When you say variable, what do you mean?

22 Q. Limited. It was limited; is that correct?

23 A. It is limited.

24 Q. And, in fact, even in the 1920s when we are  
25 talking into account stream flows, the data way

1 back then was fairly limited, is that true?

2 A. Yes.

3 Q. And with respect to the 1940s would you also  
4 agree that the data used in the 1940s would not  
5 be as good as the measurements and the data we  
6 have today?

7 A. That is likely true.

8 Q. Now, so with respect to trying to predict a  
9 drought that occurred in the 1600s, for example,  
10 would you agree that trying to make a prediction  
11 in that regard is purely speculative in nature?

12 A. No. I would say it's not speculative.

13 Q. But it's based on best guesses and  
14 approximations; is that correct?

15 A. I would not agree with the word guess, I would  
16 with the word approximation.

17 Q. But in other words, our ability to predict a  
18 drought prior to the early 1900s is not as good  
19 as our data to suggest a drought today; is that  
20 right?

21 A. I don't know if that's true.

22 Q. What do you mean by that?

23 A. So when you say our ability to predict a  
24 drought.

25 Q. I am sorry. Our measurement of droughts in the

1 last 20 years, I am sorry I will rephrase. Our  
2 measurements of droughts in the last 20 years  
3 are better than measurements in the 1900s, is  
4 that true?

5 A. I certainly think we have the ability to measure  
6 more aspects of a drought. In other words, back  
7 in the 1800s the primary use of water was for  
8 agriculture and for domestic water supply, which  
9 was individual hand dug wells. And today we can  
10 measure that in much more nuanced ways. We look  
11 at stream flow, we look for environmental  
12 affects, we look for wastewater return flows, we  
13 look for minimum flows, we look for compact  
14 requirements. We have much more data today than  
15 we did.

16 Q. I am going to ask that you flip to Exhibit 6.  
17 Which was titled 2000 Years of Drought  
18 Variability. And it's a blue tab.

19 A. I am there.

20 Q. I am asking that you flip to the second page of  
21 that document.

22 A. (Witness reviews documents). All right.

23 Q. Now, on the second half of that document it  
24 mentions that due to the scarcity of records he  
25 was unable to make a full assessment of a

1 drought in 1860. Do you see where I am reading  
2 in that particular document?

3 A. Two or three sentences down, the italicized  
4 part?

5 Q. Yes.

6 A. Yes.

7 Q. So would it be an accurate statement that the  
8 records were scarce in that time period?

9 A. Scarce, yes.

10 Q. Now, just a moment ago Mr. McLeod asked you a  
11 question about whether or not you made a  
12 recommendation as to the amount of water that  
13 should be put in storage. And you said you  
14 didn't remember what that recommendation was; is  
15 that correct?

16 A. That's correct.

17 Q. And as you are sitting here now, would it be a  
18 true statement that you still don't have a  
19 recollection of what that recommendation is?

20 A. I don't have a good recollection, no.

21 Q. As you are sitting here today you are not  
22 prepared to testify on that particular aspect of  
23 the City's planning; is that right?

24 A. As I am sitting here right now, that's correct.

25 Q. In Exhibit 7, and I just want to understand, it

1 was an Environmental Impact Statement, and you  
2 talked a little bit about the RESNET model as it  
3 related to that particular report. As you are  
4 sitting here today, do you have any knowledge as  
5 far as whether or not that Environmental Impact  
6 Statement took into account the concept of  
7 aquifer maintenance credits? Do you have an  
8 opinion on that?

9 A. I know the RESNET model certainly calculated the  
10 aquifer storage. I do not recall whether they  
11 specifically used credits.

12 Q. Fair enough. Do you have any idea of whether or  
13 not that particular document, that Environmental  
14 Impact Statement, took into account the proposed  
15 minimum index levels that have been proposed by  
16 the City here today?

17 A. The ones proposed today, no, I did not. Well, I  
18 mean define minimum, dead rock bottom, yes. The  
19 revised pumping levels, no, I do not believe it  
20 did.

21 Q. And I want to make sure I understand what you  
22 were saying about the RESNET model. You said  
23 that there were problems with the RESNET model I  
24 think because it's difficult to change some of  
25 the variables and it's not very user friendly

1 for that reason; is that right?

2 A. Yes.

3 Q. But didn't you also say that the MODSIM model,  
4 MODSIM DSS model, is based off of RESNET?

5 A. It's the other way around. RESNET was based off  
6 MODSIM. MODSIM has continued to be developed.  
7 RESNET stopped, MODSIM is continuing to be  
8 developed through today. So its interphase is  
9 much more robust.

10 Q. So what you are saying is that the RESNET model  
11 is more archaic than the MODSIM DSS model, would  
12 that be a true statement?

13 A. The user interphase is much more archaic.

14 Q. I heard you say something about concerns that  
15 the City of Wichita had with respect to plumbing  
16 issues in the city. Can you tell me what you  
17 meant by that.

18 A. So when we put the, as built pipeline  
19 capacities, in from both Equus Beds aquifer and  
20 from Cheney Reservoir, to the water treatment  
21 plant, there was some places where between  
22 valving and physical bifurcations where the  
23 system had, under certain hydraulic heads, had  
24 performance issues where it could not, it was  
25 designed to be a 65 MGD pipeline, and for

1 example, if the Cheney Reservoir was low they  
2 could not get 65 MGD through the pipeline.

3 Q. Now can that infrastructure be improved by the  
4 City?

5 A. Yes. And I believe it has been. The issues we  
6 identified at the time.

7 Q. And how do you know that that infrastructure was  
8 approved?

9 A. Because when we identified it they said, oh, we  
10 have plans in place, we have budget allocated to  
11 modify those things.

12 Q. And who told you that specifically?

13 A. My recollection would be it would be Deb Aoy  
14 with the City of Wichita, who was my main  
15 contact at the time. That is spelled A-O-Y.

16 Q. I think you also indicated you trained two  
17 individuals at the City with the MODSIM DSS  
18 model, is that a true statement?

19 A. Yes.

20 Q. Which two individuals did you train?

21 A. So Deb Aoy and, and I am drawing a blank on the  
22 second name. I am sorry. It will come to me in  
23 a few minutes.

24 Q. Are there any documents that would refresh your  
25 memory in that regard?



1 A. Not in front of me here.

2 Q. So as you are sitting here today, the only  
3 individual that you can remember is Deb Aoy?

4 A. I am sorry, Mike Jacobs.

5 Q. Did you train anybody else on the MODSIM DSS  
6 model?

7 A. As staffing changed at the City of Wichita I  
8 also worked quite extensively with Scott Macey.

9 Q. Anybody else?

10 A. Not for extended training, no.

11 Q. One thing you mentioned about the analysis you  
12 did, you indicated that essentially for the 1%  
13 drought conditions you looked at ten years; is  
14 that right?

15 A. Yes.

16 Q. You, in fact, just ran the model for that ten  
17 years; is that right?

18 A. Yes. The model, the period of record would be  
19 eight years, but we put two normal, what we  
20 consider average years in front of the model, so  
21 that when you run it you have to make  
22 assumptions by reservoir elevations, aquifer  
23 elevations. And we ran it for two years with  
24 average conditions to let the model equal out  
25 and come to an equilibrium before we hit it with

1 a drought.

2 Q. Do you think it would be good analysis in the  
3 future to analyze some other periods of time and  
4 see what kind of results you get for those other  
5 periods of time?

6 A. We did that when we first converted the model.  
7 We took the model, it was designed for a future  
8 condition, larger demands, additional pipelines,  
9 things like that. Converted it from RESNET to  
10 MODSIM, trimmed it down to the existing system  
11 and ran the full period from the '30s to the  
12 present. And we looked at both as, for example,  
13 the pipeline changes, how that would be  
14 affected. So we did that.

15 Q. And what did you learn from having done that?

16 A. Certainly the most critical period was the 1930s  
17 for the City of Wichita system.

18 Q. What were the average conditions that you  
19 accounted for?

20 A. I would have to go back and look. We picked a  
21 certain year, we looked at stream flow,  
22 reservoir contents, things like that and picked  
23 one that we thought was representative of all of  
24 those things.

25 Q. What variables did you take into account?

1 A. Besides the ones I just mentioned, I don't  
2 recall anything other than that.

3 Q. You mentioned just a minute ago that the Little  
4 Arkansas River contributes to the aquifer  
5 everywhere that it flows, I think was your  
6 statement from your earlier testimony; is that  
7 correct?

8 A. I am sorry, repeat that.

9 Q. I think you said in your earlier testimony that  
10 the Little Arkansas River contributes to the  
11 aquifer at every location where it flows. Was  
12 that a true statement from your earlier  
13 testimony?

14 A. I think you may have that, well, one of us is  
15 remembering something wrong or differently.  
16 (Witness reviews documents).

17 Q. I guess my question is, does the aquifer  
18 contribute to the Little Arkansas River or does  
19 the Little Arkansas River contribute to the  
20 aquifer?

21 A. That's what I want to check before I answer your  
22 question.

23 Q. Okay.

24 A. (Witness reviews documents). So back to the  
25 technical memo we did in 2013, we did some

1 graphs of how RESNET interacted with both the  
2 Little Arkansas and the Big Arkansas River. And  
3 from that, the Little Arkansas Equus Beds flows  
4 to the Little Arkansas River at both locations,  
5 so, yes.

6 Q. Okay. And I guess my question is, how did you  
7 take that into account in your modeling?

8 A. So in MODSIM model we simulate the Equus Beds  
9 aquifer physically as a giant reservoir with no  
10 evaporation on it. And depending on the  
11 elevation in the aquifer, there are equations  
12 that dictate how fast the water leaks in to the  
13 Little Arkansas River. So when the aquifer is  
14 very high it leaks at a faster rate to the  
15 reservoir than when the aquifer is low. And  
16 then we have a series of equations that says  
17 what's the elevation in the groundwater. And  
18 then we apply what we believe is the correct  
19 equation to say there is a lot of leakage, not  
20 much leakage. So as the model simulates the  
21 reservoir going up and down, the actual loss  
22 changes. It is responsive to the elevation in  
23 the aquifer.

24 Q. As you analyzed the variability within the  
25 aquifer and whether or not it can take on

1 recharge? Did you analyze anything like that,  
2 whether or not the aquifer itself, how fast it  
3 would recharge naturally?

4 A. No. In the RESNET model there is a flat  
5 recharge rate and we just used that.

6 Q. So you used a flat recharge rate for the Equus  
7 Beds aquifer. Would that same flat recharge  
8 rate be used, for example, in the Ogallala in  
9 western Kansas? Would you use that same rate?

10 A. Unlikely.

11 Q. Tell me what you mean by that.

12 A. Well, the recharge rate we used was 3.2 inches a  
13 year. So if you happen to be in the area of the  
14 Ogallala that had 3.2 inches of infiltration, it  
15 might; but it would be but unlikely.

16 Q. How did you come up with the number of 3.2?

17 A. That came from the RESNET model. The  
18 documentation in the RESNET model said that was  
19 provided by the USGS.

20 Q. Now tell me what it means when you said that the  
21 drought in the 1930s to 1940s was worse than a  
22 basic 1% drought. Tell me what that means.

23 A. When we calculated the 1% drought based on the  
24 PDSI data, first of all we looked at the length  
25 of the drought and we said a 1% drought would

1 have a length of eight years. And then we went  
2 through the historical years where we have gauge  
3 data, and we said what droughts do we have that  
4 are eight years long? And if we look at the  
5 cumulative shortage over that period, how well  
6 does that match? And for the 1% drought of the  
7 1930s, it was pretty close, like you said, minus  
8 22 compared to minus 24. The practical affect  
9 of that is that the 1930s drought is strictly,  
10 from an engineering basis, is slightly more  
11 severe over those eight years, and the drought  
12 that we calculated.

13 As a practical affect, well, we never  
14 really know the difference, but I think as a  
15 practical affect. It's much more defensible to  
16 use the drought of the 1930s, which is a  
17 historical period, than to get to go cherry pick  
18 years that match the drought, the cumulative  
19 deficit exactly.

20 Q. Now, you just mentioned cherry picking years. I  
21 would like now to flip to Exhibit 1. Which was  
22 the proposal itself. And I ask that you turn to  
23 2-2. Page 2-2 of the proposal.

24 A. (Witness reviews documents). All right.

25 Q. Now, looking at 2-2, for example, let's look at,

1 let's look at a seven year drought in that  
2 table. And the years that it uses is 1946, 1952  
3 to 1956 and then again 1981. Would it be an  
4 accurate statement to say that in calculating  
5 these particular droughts that they were cherry  
6 picked years?

7 A. Those years were picked first for the longest  
8 period of record, less than seven years, had the  
9 highest PDSI, so '52 through '56. And then the  
10 next closest years in order that would get us  
11 close to that number. So, yes, I picked those  
12 years, but there was logic to it in that 1946  
13 comes before, we start with the '52 to '56  
14 period. And '46 was the closest prior year,  
15 prior to that period. And 1981 was the next  
16 year after to come up with the cumulative PDSI  
17 that was, in this case, the same as the  
18 calculated PDSI.

19 Q. So based on which years you choose that could  
20 change the calculations drastically; is that  
21 correct?

22 A. It certainly would change them. I don't know  
23 that I would say drastically. Yes, which four  
24 years you choose makes a difference.

25 Q. Now, did you analyze the years 2011 and 2012,

1 did you analyze those particular years?

2 A. I did not. This work was done before then.

3 Q. What did you say? I am sorry.

4 A. I did not. My work that was reported in these  
5 reports was before then.

6 Q. So any analysis as it relates to 2011 and 2012,  
7 you wouldn't have an opinion on?

8 A. So Scott Macey at the City did that work and he  
9 had me review it. I did not do it. I do have  
10 an opinion on it.

11 Q. Okay. So I think you kind of answered this  
12 before, the reason you plan for a 1% drought is  
13 because if you plan for a drought that's more  
14 severe it would be, it wouldn't be cost  
15 effective, is that what you said?

16 A. Broadly speaking, yes.

17 Q. Do other cities generally plan for a 1% drought?  
18 Is that common from your experience?

19 A. It is very common from my experience.

20 Q. Do some cities, in your experience, plan for  
21 lesser droughts?

22 A. Some cities don't plan at all. So I guess the  
23 answer is yes.

24 Q. Did you model any other type of drought as it  
25 relates to the City's proposal? For example, a



1           2% drought?

2       A.   Well, certainly within the period of record we  
3           did.  So all lower droughts that were in the  
4           period of record within the RESNET model, we  
5           included those.  We run the whole period of  
6           record and there were little droughts within  
7           that.  So, yes, we modeled those.  We looked at  
8           those and said those are not the primary  
9           interest of the city, they either have the  
10          existing resources to get through those or maybe  
11          we should worry about the big ones at the end.

12       Q.   If you were to model for just the 2% drought,  
13          what impact would that have for the Equus Beds  
14          aquifer and for Cheney, how would that be  
15          different from the 1% drought?

16       A.   I don't recall that off the top of my head, but  
17          I suppose the answer is, they would get drawn  
18          down less.

19       Q.   Now, in the City's proposal they calculate a 1%  
20          drought based on eight years, is that a true  
21          statement?

22       A.   Yes.

23       Q.   Is there a different period of time that could  
24          be used to calculate a 1% drought, either more  
25          or less than eight years?

1 A. Not by the methodology I used. A 1% drought has  
2 a period of record of eight years.

3 Q. Under other methodologies, can you use a lesser  
4 period to calculate a 1% drought?

5 A. I believe there are methodologies that would use  
6 that, I am not sure that they would be industry  
7 standard methods.

8 Q. Is there such a thing as a normal or average 1%  
9 drought?

10 A. Not to my knowledge.

11 Q. So, in other words, it's difficult to  
12 approximate what a 1% drought would look like,  
13 is that a true statement?

14 A. You could arrive at it mathematically, I am not  
15 sure it would be meaningful.

16 Q. So just to answer my question before, and I am  
17 circling back to it, a 1% drought doesn't have  
18 to be eight years, is that a true statement?

19 A. That's true.

20 Q. If we used a shorter time period to calculate a  
21 1% drought, let's say six or seven years, what  
22 would be the impact to Cheney and the Equus Beds  
23 aquifer? Or do you have an opinion on that as  
24 you are sitting here today?

25 A. So by my methodology, which has been used in

1 other municipalities, it's not for Wichita's  
2 state only, for this area, the 1% drought is  
3 defined as being eight years long. If you made  
4 a drought that was shorter it would no longer be  
5 a 1% drought.

6 Q. Could future data change that analysis? In  
7 other words, if we had drought events in the  
8 future that were different than the 1930s and  
9 1940s, could that change your analysis of what  
10 constitutes a 1% drought?

11 A. Yes.

12 Q. Now, I want to back up just a moment. In your  
13 expert report you highlighted three parts of the  
14 City's proposal that you had expertise on. And  
15 I want to go over those. The first was section  
16 2.1; is that correct?

17 A. (Witness reviews documents). I am sorry quote  
18 that again.

19 Q. In your amended report that was filed there are  
20 three sections of the report that you believed  
21 you had expertise on and the first section was  
22 2.1. Is that correct?

23 A. Do you have the page number for that?

24 Q. I am not sure where it is there within your  
25 exhibits.

1 MR. STUCKY: May I approach the  
2 witness?

3 THE HEARING OFFICER: Yes.

4 BY MR. STUCKY:

5 Q. Right here (indicating).

6 A. Okay.

7 Q. If I were to tell you that that is, in fact,  
8 your amended expert report, would you agree with  
9 that statement?

10 A. It appears to be, yes.

11 Q. Now, in that particular expert report there are  
12 several sections that I have in boxes that you  
13 had expertise on; is that correct?

14 A. Yes.

15 Q. And the first section was 2.1; is that right?

16 A. Yes.

17 Q. So there are several bullet points under section  
18 2.1; is that correct?

19 A. Yes.

20 Q. Now, the next part of the expert report that you  
21 indicate that you have expertise on, I am sorry,  
22 of the City's proposal that you have expertise  
23 on is section 2.3; is that right?

24 A. Yes.

25 Q. And would it be a true statement that actually

1           there is not any other portion of the City's  
2           proposal that you indicated that you had  
3           expertise on, is that true? In your expert  
4           report at least.

5       A.    These are the parts that I was asked to testify  
6           on.

7       Q.    So that would be a true statement, correct?

8       A.    For the purposes of this hearing, that would be  
9           true.

10      Q.    And so at least as it relates to your expert  
11           report, you weren't asked to serve as an expert  
12           witness on any other portion of the report, is  
13           that true?

14      A.    Unless it was those other opinions that relied  
15           somehow on my work.

16      Q.    Otherwise that statement would be true, correct?

17      A.    Otherwise that statement would be true.

18      Q.    All right. Let's jump back to some of the  
19           variables that were used in calculating a 1%  
20           drought scenario. Did you take into account the  
21           concept of multiyear flex accounts in your  
22           analysis?

23      A.    No.

24      Q.    And why not?

25      A.    Because it was not necessary for my work.

1 Q. And if multiyear flex accounts were being used  
2 in the Equus Beds Groundwater Management  
3 District -- well, let me ask. Do you know what  
4 a multiyear flex account is?

5 A. I have heard them discussed, I have not been  
6 asked to look in to them or analyze them in any  
7 way.

8 Q. Fair enough. What source is the groundwater  
9 accounted for in your simulation? Or did it  
10 just assume that the groundwater was accumulated  
11 in a constant fashion like you testified to?

12 A. There were three types. The first was a steady  
13 state infiltration 3.2 inches every year. The  
14 second was on the Big Arkansas River where when  
15 the stream and aquifer levels are right, the  
16 river itself can contribute water to the  
17 aquifer. And then the biggest one was ASR  
18 pumping, where we put ASR water, when available,  
19 in the Little Arkansas River in the aquifer for  
20 later use by the City.

21 Q. Now, I ask that you flip to Page 2.5 of the  
22 proposal, and it's table 2.3.

23 A. (Witness reviews documents). This is the MODSIM  
24 result for the 1% drought.

25 Q. Now, with respect to those MODSIM results there

1 is numbers and percentages that have to do with  
2 Cheney Reservoir; is that correct?

3 A. Yes.

4 Q. Now, is it true that with respect to those  
5 calculations, if we look at drought year one  
6 with respect to Cheney Reservoir, it  
7 demonstrates that, it's indicated that the  
8 Cheney Reservoir would be 110 percent full; is  
9 that correct?

10 A. That's what the table says, yes.

11 Q. So would it be an accurate statement that at  
12 least for year one of the drought it was assumed  
13 that the Cheney Reservoir was 110 percent full?

14 A. This table was not prepared by me. And in  
15 talking with people I understand there is nuance  
16 here that I am not able to discuss.

17 Q. So as far as why, so just so I am clear, since  
18 this table wasn't prepared by you and if I were  
19 to ask some very detailed questions as to how  
20 these numbers were calculated and accounted for,  
21 you wouldn't have an opinion on that; is that  
22 correct?

23 A. That's correct.

24 Q. And so just to back up, a moment ago Mr. McLeod  
25 asked you a question if you agreed with

1 everything in section 2.3 of the model. Do you  
2 remember that question?

3 A. Yes.

4 Q. And you said the answer was yes, but as we are  
5 sitting here now, it's a true statement to say  
6 that you actually don't have an opinion on table  
7 2.3; is that correct?

8 A. I was not asked to prepare an opinion on table  
9 2.3; that is correct.

10 Q. So would it be fair to revise your answer to  
11 exclude any kind of analysis or opinion on that  
12 particular table?

13 A. I don't know if exclude is quite the right word.  
14 I reviewed all the work in some form or another.  
15 When you ask particular questions about  
16 particular details I am not prepared to provide  
17 those answers. And while I reviewed them I am  
18 not the originator of that work. So I may have  
19 an opinion about it, but not as far as this  
20 proceeding.

21 Q. Okay. But as you are sitting here today, you  
22 can't say, with your credentials on the line,  
23 your expertise on the line, that all the numbers  
24 in 2.3 are accurate. Would that be a true  
25 statement?



1 A. I would say there are better people to answer  
2 that question. Yes.

3 Q. Now, I just have a few questions about the 1930  
4 to 1940 years that were used for some of the  
5 model runs. I am going to ask a little bit  
6 about that. Would the stream flow data and the  
7 precipitation data, evaporation data, things of  
8 that nature, be taken into account in those  
9 years?

10 A. When you say, well, by whom? Taken into account  
11 by whom?

12 Q. By the individuals that were measuring the data  
13 in the 1930s and 1940s. Were those variables  
14 taken into account with the measurements?

15 A. The measurements would reflect those things,  
16 yes.

17 Q. And so would there be, and I think you already  
18 answered this. There is better data today for  
19 that, for like the years 2011 and 2012, there  
20 would be better data in that regard; is that  
21 correct?

22 A. We certainly have more data. There is also  
23 gauge stations where the data may not be better,  
24 may be less accurate than it was even then.

25 Q. Would it have been a good idea to use other

1 software, other software to double check some of  
2 the City's work with respect to calculating a 1%  
3 drought?

4 A. When you say calculate a 1% drought, do you mean  
5 which years to use in a 1% drought or do you  
6 mean calculate the results on the City's system?  
7 How a 1% drought would interact with the City's  
8 system?

9 Q. To calculate the results of how it would impact  
10 the City's system.

11 A. There are certainly other modeling packages out  
12 there. In my professional opinion, the MODSIM  
13 model, while it has its limitations, it is the  
14 best software to do this job.

15 Q. All things being equal though, would it be a  
16 good idea to run some of these calculations on  
17 another model as well and see what the results  
18 are?

19 A. Well, we did. I mean, we ran it on the RESNET  
20 model, and took the results and replicated it,  
21 so it's been done twice.

22 Q. Would it be good to try it on additional models  
23 in the future?

24 A. If you can find a better model, that would be  
25 great.

1 Q. Do you have any opinion on whether or not  
2 replicating the 2011 and 2012 data over eight  
3 years is a good way to calculate a drought for  
4 planning purposes?

5 A. I do.

6 Q. What is your opinion in that regard?

7 A. So if we back up and look at, for example, the  
8 1930s, that's the 1% drought, I chose those  
9 years because they happened historically. That  
10 was a natural trace. So any influences by long  
11 term weather or climate, sun spots, whatever, we  
12 are taking that into account. Statistically you  
13 can take any eight years that added up to the  
14 cumulative PDSI being the same and run them.  
15 And there are whole areas of water resources  
16 modeling where you just do that.

17 It's called Monte Carlo simulations and  
18 you pick years of random and run them over and  
19 over and over to see if the order or the number  
20 makes a difference in the answer you get. And,  
21 in fact, the work you do for Aurora we have done  
22 just that. We have done something like 10,000  
23 simulations. I chose the 1930s because it was  
24 an historical period.

25 If you just took two years of a drought

1 and say, okay, we'll plunk this down and we will  
2 repeat it like a two year drought and we know a  
3 1% drought is eight years long, and run it four  
4 years in a row you would have no idea if that  
5 represents a 1% drought. But in this case we  
6 know that it does because we look at not only  
7 the duration, but the cumulative depth of  
8 drought.

9 And conveniently, when you take eight  
10 years for periods of the 2011 and 2012 drought,  
11 the cumulative PDSI deficit is the same, they  
12 are approximately the same, as what was  
13 calculated in the '30s. So when I first saw  
14 that that's something that wanted to be done, I  
15 was pretty skeptical and then said, oh, well,  
16 that checks out. So, yes, I believe that 2011  
17 and 2012 is a reasonable approximation of a 1%  
18 drought considering there are thousands of  
19 possible droughts and we have now looked at two.

20 Q. I know you already indicated that this was  
21 outside of the scope of the expertise that you  
22 were sought for, but could you flip to Page 2-9  
23 of the City's expert report.

24 A. Yes.

25 Q. Now, in that top paragraph at the very end it

1           says, there is a sentence that says, based on  
2           this comparison the years 2011 and 2012 were  
3           selected to repeat four times for a total of  
4           eight years to simulate a 1% drought. Do you  
5           see where in the proposal I am reading?

6           A. Yes.

7           Q. And in the very next sentence says, this  
8           approach results in a total seasonal cumulative  
9           PDSI, Palmer Drought Severity Index, of -23.45  
10          with a mean PDSI of -2.93?

11          A. Yes.

12          Q. Would it be a true statement that replicating  
13          2011 and 2012 four times to come up with the  
14          eight year drought would it be a true statement  
15          to say that that Palmer Drought Severity Index  
16          was more severe than the 1930s to 1940 drought?

17          A. Off the top of my head I don't remember what  
18          those numbers were. But if that number, if the  
19          PDSI -23.4 is a greater negative number than the  
20          one that was calculated for the 1% drought, it  
21          could be more severe, yes.

22          Q. Let's look at the bottom of that table, table  
23          2-4. It says 1933 to 1940 cumulative, and there  
24          are some numbers indicated there. Do you see  
25          those PDSI numbers? Second column from the

1 bottom of that table.

2 A. You mean in a row?

3 Q. Yes, table 2-4 on that same page.

4 A. Yes.

5 Q. At the very bottom if you go up two rows.

6 A. Yes.

7 Q. It says 1933 to 1940 cumulative?

8 A. Yes.

9 Q. Would you agree that at least with what that  
10 data shows is that the 2011 and 2012 replicated  
11 over four years created a more severe drought  
12 than the one of the 1930s to 1940s?

13 A. Mathematically speaking, that's correct.

14 MR. STUCKY: No further questions.

15 THE HEARING OFFICER: We are now at  
16 12:30. Would the parties like to continue on  
17 until about one or go ahead and take a lunch  
18 break now?

19 MS. WENDLING: I only have a few  
20 questions, it should be less than 30, if that  
21 matters.

22 THE HEARING OFFICER: That might be  
23 nice to at least wrap up that part of it. So  
24 we'll move on to the Intervenor's cross.

25 CROSS EXAMINATION

1 BY MS. WENDLING:

2 Q. So if I understand what you were tasked with was  
3 to develop a model to help the City of Wichita  
4 look at water availability. Is that what the  
5 MODSIM does?

6 A. I would modify that a little bit to say, take  
7 the City's existing model and put it in a form  
8 that was used to city staff; but, yes, it is to  
9 look at groundwater planning management for the  
10 City of Wichita.

11 Q. And you talked about the correlation from the  
12 little or from the Arkansas River to  
13 southwestern Kansas?

14 A. Yes.

15 Q. Does the same statement apply to the Little  
16 Arkansas River or is that isolated to the  
17 Arkansas River?

18 A. It's both.

19 Q. So both rivers are best correlated to  
20 southwestern Kansas?

21 A. Yes.

22 Q. And you mentioned that your determination that  
23 the drought in the '30s most closely correlated  
24 to the 1% drought that was before you had data  
25 on the 2011 and 2012 drought?

1 A. Yes.

2 Q. Have you looked at that further, now that data  
3 is available from the 2011 and 2012 as well?

4 A. The City did that work. I reviewed it.

5 Q. When you are doing your drought reconstruction  
6 analysis, do you ever use, or are the PDSI  
7 numbers able to tell you when a drought has  
8 ended?

9 A. Can you ask that a slightly different way?

10 Q. Is there an assigned PDSI value for not being in  
11 a drought state?

12 A. Only if you said normal is zero and my  
13 definition of that was plus or minus a half, so  
14 -.5 to +.5, only that the PDSI numbers became  
15 positive again. But, no, there is no defined  
16 time. For example, it has to be a positive  
17 number, a positive number at all or positive  
18 number for two years or three years, no, there  
19 is not. Does that answer your question?

20 Q. So you would not be able to use the PDSI index  
21 for signaling recovery from a drought?

22 A. If by that you mean if an extended drought had a  
23 cumulative deficit would you have to wait until  
24 you saw the deficit recover until you had a  
25 positive values to fill in the previous deficit,



1 I have never seen that done that way. But that  
2 just means I haven't seen it. It doesn't mean  
3 it couldn't be used that way.

4 Q. So in your work with drought reconstruction have  
5 you looked at the time it takes to recover from  
6 a drought?

7 A. No. My work was focused on meeting city demand  
8 through a drought. So once it starts to get  
9 wetter, whether that's through river flows that  
10 contribute to the aquifer or whether that's  
11 through increased storage at Cheney, you know  
12 that you are through the worse of it. I have  
13 not looked at recovery.

14 Q. In your other experience outside of the City of  
15 Wichita, have you looked at recovery?

16 A. It depends on the client. Places like the City  
17 of Steamboat Springs where we just did a model  
18 this year, their storage normally fills every  
19 year. So when we looked at various stressors on  
20 their system, it was, it often did include  
21 recovery; but I wouldn't say that was a criteria  
22 for it.

23 Q. So it is possible to estimate the length of time  
24 it will take to recover from a 1% drought?

25 A. Yes. There would be a lot of assumptions to it,

1 but, yes.

2 Q. Going back to the proposal, I believe Exhibit 1,  
3 on page 2-3, there in the lower half of that  
4 section. Are you on the same page?

5 A. 1% Drought Simulation by MODSIM?

6 Q. Yes.

7 A. Yes.

8 Q. You mentioned that when you were preparing the  
9 model for the City there were certain supplies  
10 that you removed. This is with the conversion  
11 from RESNET to MODSIM. Or is that what you  
12 referred to on the lower half of the Page 2-3 of  
13 the proposal? Are those changes that you made?

14 A. No, the changes I made were more where they had  
15 talked about, for example, expanding the local  
16 well field, so the capacity of that was higher  
17 than they thought would be reasonable to  
18 develop. So we reduced things like that. And I  
19 don't remember all the details of that.

20 Q. So the updates on 2-3 to your knowledge would  
21 have been made by the City?

22 A. I would have to look at each of them thoroughly;  
23 but generally speaking, yes.

24 Q. You mentioned earlier that you have done study  
25 on the Arkansas River, not only for the City but

1           maybe other work. Have you also studied the  
2           Little Arkansas River flow?

3       A.    Only looking at the stream flows to see how they  
4           correlated with the PDSI data.

5       Q.    Does that correlation to stream flows in  
6           southwestern Kansas apply to all the streams,  
7           maybe the basin storage area or central Kansas?  
8           Or is it just the Little Arkansas River and the  
9           Arkansas River?

10      A.    Say that again.

11      Q.    Your correlation of stream flow for purposes of  
12           this, you said correlated best to southwestern  
13           Kansas, is that for Little Arkansas River and  
14           Arkansas River only?

15      A.    So when I -- I will try to answer your question,  
16           I may not do it well. When you go back to the,  
17           say, 1920s there is a limited number of gauges.  
18           And there is one on, if you go far enough, just  
19           one on the Little Arkansas and one on the Big  
20           Arkansas. We took those independently and  
21           correlated them with surrounding PDSI, locations  
22           where PDSI had been calculated. So we did the  
23           north part of Kansas, the north part of  
24           Oklahoma, and the east two thirds of Kansas. So  
25           essentially we started from Wichita and went one

1 dot out in every direction for both the Big  
2 Arkansas and the Little Arkansas River and both  
3 correlated best to the southwest Kansas PDSI. I  
4 don't believe there was data farther up Little  
5 Arkansas with a long enough period of record to  
6 do a correlation. So I think the answer to your  
7 question is no, it did not include the entire  
8 Equus Bed area.

9 Q. Do you recall the distance of the gauge that was  
10 used in terms of making your area?

11 A. So I just took the gauge record itself and then  
12 correlated that to the PDSI data.

13 Q. Okay.

14 A. So it's whatever the gauge represents, whatever  
15 the tributary area of that represents.

16 Q. During the cross examination you were talking  
17 about the data that you ran for the ten-year  
18 period.

19 A. Yes.

20 Q. And you made a comment that you ran it from the  
21 1930s to present.

22 A. Yes.

23 Q. But you also mentioned this was done before the  
24 2011-2012 period?

25 A. That was a fudge, I didn't remember how

1 currently it went through. I believe it was  
2 2008, but I would have to check that.

3 MS. WENDLING: Those are all of my  
4 questions.

5 THE HEARING OFFICER: Mr. McLeod, I  
6 assume you will want to ask some more questions  
7 before your witness is excused; is that right?

8 MR. McLEOD: I have maybe three or four  
9 redirects, very short.

10 THE HEARING OFFICER: Let's go ahead  
11 and do them.

12 REDIRECT EXAMINATION

13 BY MR. McLEOD:

14 Q. Mr. Winchester, one of the critiques that you  
15 were asked about in cross and you responded that  
16 PDSI is not a perfect model. Have you ever  
17 worked with a perfect model?

18 A. I have never worked with a perfect model.

19 Q. If we waited to attempt any science until we had  
20 a perfect model to employ in any undertaking,  
21 how often would we accomplish anything  
22 scientifically?

23 A. Never.

24 Q. And I think during cross you admitted that there  
25 apparently have been critiques of PDSI and that

1           it just relies on the available data. Have you  
2           used models to rely on unavailable data?

3       A.    No, I have not.

4       Q.    And with respect to the series of questions  
5           about your expertise on stream flow in western  
6           Kansas, do you need to have much expertise on  
7           stream flow to know what's downstream?

8       A.    I don't believe so.

9                       MR. McLEOD: That's all.

10                      THE HEARING OFFICER: Does anyone  
11           anticipate at this time any more questions for  
12           Mr. Winchester? Okay. Then I think this would  
13           be a good time for a break. It is 12:40 and  
14           let's try to be back at 1:45. Thank you.

15                      (REPORTER'S NOTE: At this time,  
16           12:40 p.m., a lunch recess was taken, after  
17           which, 1:45 p.m., the following proceedings were  
18           held:)

19                      THE HEARING OFFICER: We are now back  
20           on the record. It is 1:45. And, Mr. McLeod, I  
21           believe it's time for you to continue.

22                      MR. McLEOD: Thank you. The City will  
23           next call Joe Pajor to the stand.

24                                      JOSEPH PAJOR,  
25           was thereupon called as a witness herein, and

1 after having first been duly sworn to testify to  
2 the truth, the whole truth and nothing but the  
3 truth, was examined and testified as follows:

4 DIRECT EXAMINATION

5 BY MR. McLEOD:

6 Q. Please state your name for the record.

7 A. Joseph Pajor.

8 Q. Mr. Pajor, do you hold any degrees from  
9 universities or technical schools?

10 A. Yes, I do.

11 Q. What are they?

12 A. I have a bachelor's degree from Benedictine  
13 College in Atchison, Kansas with a major in  
14 physics and a minor in mathematics. I have a  
15 Master of Science degree from Wichita State  
16 University in physics.

17 Q. Do you maintain any professional licenses or  
18 certifications?

19 A. I have a certification in city management from  
20 the Wichita State University and the  
21 International City and County Manager  
22 Association certificate in public management.

23 Q. Where are you employed?

24 A. City of Wichita, Kansas.

25 Q. How long have you been with the City?

1 A. A little over 44 years.

2 Q. What positions have you held with the City?

3 A. For the last decade I have been the deputy  
4 director of public works and utilities, I spent  
5 one year of that time as the interim director of  
6 the department. Prior to that I held a number  
7 of positions in energy, housing, economic  
8 development, natural resources, solid waste  
9 management.

10 Q. In the course of your work for the City have you  
11 had occasion to deal with water supply issues?

12 A. Yes, I have.

13 Q. Were you involved in the projects ultimately  
14 permitted by the State Division of Water  
15 Resources as the ASR Phase I and Phase II  
16 projects?

17 A. Yes. I became actively involved with the  
18 project during the development of Phase II.

19 Q. Have you also served on the governing board of  
20 Equus Beds Groundwater Management District  
21 Number 2?

22 A. Yes.

23 Q. For how long?

24 A. It's been approximately nine years. I am  
25 currently still on that board.



1 Q. In the course of that service on the district  
2 board, did you participate in the Board's review  
3 and analysis of water rights applications, or  
4 the rights modification applications and related  
5 matters on which the Board made recommendations  
6 to the Division of Water Resources?

7 A. Yes.

8 Q. Did those reviews and analyses typically include  
9 consideration of whether the proposed diversion  
10 or modification would impair any existing rights  
11 and whether they would be consistent with the  
12 public interest?

13 A. Yes, they did.

14 Q. Are you generally familiar with the City of  
15 Wichita's integrative local water supply plan?

16 A. Yes, I am.

17 Q. What's the purpose of such a plan?

18 A. The purpose of integrated water supply plan at a  
19 high level is basically to look at the available  
20 resources for water for the customers of the  
21 utility of the City of Wichita, water and sewer  
22 utility, and to make the best possible use of  
23 those resources to meet that customer demand.

24 Q. If you would please refer to figure 12 in the  
25 proposal, which is in the black binder and has

1           been admitted as Exhibit 1. And I believe that  
2           figure can be found at Page 33 of the proposal.

3       A.   (Witness reviews documents). Okay.

4       Q.   Where is the graphic there drawn from?

5       A.   The graphic is based on the information that's  
6           in the USGS Survey Scientific Investigation  
7           Report 2015-5121.

8       Q.   Is that figure depicting the City's use of  
9           groundwater and surface water sources over a  
10          period of decades from a period of 1938 to 2013?

11      A.   Yes.

12      Q.   What does it show happening in the 1993 to '98  
13          timeframe with respect to the surface water  
14          supply and the use of groundwater supply?

15      A.   From 1993 to '98 the City made a conscious  
16          transition from utilizing a source of supply,  
17          primarily the Equus Beds, to transition that to  
18          be primarily from the surface water supply, the  
19          Cheney Reservoir. So basically taking as much  
20          water as possible from surface water supply and  
21          reducing our dependance on the groundwater  
22          resource in the Equus Beds.

23      Q.   Was that transition a consequence of the  
24          integrated local water supply plan?

25      A.   Yes, it was.

1 Q. Did the implementation of integrated local water  
2 supply plan result in a substantial increase in  
3 the percentage of surface water represents in  
4 the total surface water to meet demands?

5 A. It did. It went from approximately 40 percent  
6 on an annual average basis to 60 percent of our  
7 demand being met with surface water.

8 Q. Please turn to figure 13 on Page 3-4 of the  
9 table.

10 A. Okay.

11 Q. Where was that graphic taken from?

12 A. This graphic has its source the geological, U.S.  
13 Geological Survey Scientific Investigations  
14 Report 2016-5165.

15 Q. And what's this graphic illustrating?

16 A. It is illustrating the groundwater level changes  
17 in the shallow part of the aquifer in and around  
18 the Equus Beds well field that the City of  
19 Wichita operates from the period of 1993 to  
20 2016.

21 Q. What's the trend of those changes as shown in  
22 the graphic?

23 A. The trend is generally significant amounts of  
24 recovery within the City of Wichita's well field  
25 in elevations in elevations of groundwater.

1 Q. If we look back to figure 12 in the proposal, in  
2 that figure does irrigation use look to be  
3 trending above 1993 use from most of that same  
4 1993 to 2016 period?

5 A. Yes, it does appear to be the case from that  
6 data.

7 Q. And in the graphic does groundwater use for  
8 irrigation in drought years, 2011 to 2013,  
9 appear slightly higher than other historical  
10 peak years shown in that graph?

11 A. Yes, it.

12 Q. Does the figure 12 also show that the City's  
13 total use of water for public supply in the  
14 years since 1992 has not demonstrated an  
15 increase from the 1992 quantities?

16 A. Yes.

17 Q. Please turn in the lime binder to the tab marked  
18 Equus water use.

19 A. Okay.

20 MR. McLEOD: I will have the reporter  
21 mark this as Exhibit 8.

22 (City Exhibit 8 was marked for  
23 identification by the Reporter.)

24 BY MR. McLEOD:

25 Q. Mr. Pajor, what is this document that has been

1 marked as Exhibit 8?

2 A. This is a graphic presentation of information on  
3 groundwater use in the central Wichita well  
4 field area, and the rest of the study area  
5 around the well field, including the average  
6 annual precipitation in the study area 1998  
7 through 2015. And it also shows water use data  
8 from the Kansas Geological Survey, the  
9 Department of Kansas Agriculture, participation  
10 data are from the National Oceanic and  
11 Atmospheric Administration weather service.

12 Q. Do you know who produced this graphic?

13 A. I believe it was produced by consultants for the  
14 City of Wichita based on information provided by  
15 others.

16 Q. And would the others be the Kansas Geological  
17 Survey and Kansas Department of Agriculture?

18 A. Yes, that's correct.

19 Q. Is that graph providing a graphical  
20 representation of groundwater use and  
21 precipitation trends from 1988 to 2015 in a  
22 study area of the Equus Beds aquifer that  
23 includes the Wichita well field area?

24 A. That's correct, that's what it does.

25 Q. What are the two lines representing, the black

1 and black dotted lines, on the graph?

2 A. The black dotted lines shows the total  
3 groundwater use inside the central Wichita well  
4 field area. And then underneath that, the solid  
5 black line shows the groundwater municipal use  
6 inside that same area.

7 Q. Does the graphically depicted relationship,  
8 total groundwater use in the central Wichita  
9 well field area and the City's groundwater  
10 municipal use in that area, show that the total  
11 groundwater use in the central Wichita well  
12 field area historically parallels Wichita's  
13 municipal use in that area except in dry  
14 conditions?

15 A. Yes, that's a fair characterization.

16 MR. McLEOD: I will go ahead and offer  
17 this graphic as Exhibit 8.

18 THE HEARING OFFICER: Any objections?

19 MR. STUCKY: I guess we are still  
20 unclear on who created this graphic and how this  
21 graphic was calculated. So I guess we would  
22 like a little more foundation on that. I think  
23 the witness wasn't sure exactly who generated  
24 this graphic.

25 MR. McLEOD: I will come back to it

1 with a later witness.

2 THE HEARING OFFICER: Okay.

3 MR. STUCKY: So no objection subject to  
4 later foundation.

5 THE HEARING OFFICER: Okay. Under  
6 those conditions Exhibit 8 will be admitted.

7 BY MR. McLEOD:

8 Q. Mr. Pajor, when did the City begin recharging  
9 the aquifer via the ASR project?

10 A. The aquifer recharge work began with the  
11 establishment of the Phase I plan, approximately  
12 ten years ago.

13 Q. And do you know the date that the Phase II would  
14 have been placed in service?

15 A. Phase II was placed in service approximately  
16 three years ago.

17 Q. Given the relative volumes of water left in the  
18 aquifer by the City's increased use of surface  
19 water under the integrated local water supply  
20 plan, and the volumes injected by the ASR  
21 recharge, which would be the greater factor in  
22 the post 1993 recovery of water levels in the  
23 aquifer?

24 A. I think clearly the surface water rather than  
25 groundwater would be significant.

1 Q. So compared to the ASR at this point it would be  
2 a more minor component?

3 A. Yes. Yes.

4 Q. Apart from the City's change in management  
5 practices under the integrated local water  
6 supply plan and injection ASR of recharge water,  
7 do you know of any other influence on the  
8 aquifer that would account for the recovery of  
9 water levels that we have seen in figure 13?

10 A. Natural recharge and there is the possibility of  
11 changes in practices by others, but I don't have  
12 information about that.

13 Q. Do you think that the post 1993 groundwater  
14 level recoveries within the well field are  
15 primarily as the result of the implementation of  
16 the integrated local water supply plan and the  
17 City's ASR injection?

18 A. Yes.

19 Q. Did the water level recoveries in the aquifer  
20 pose a problem to the City's use of its ASR  
21 facilities to generate physical recharge  
22 credits?

23 A. Yes, it's created a problem because the concept  
24 of the artificial recharge was that the area  
25 that had been depleted from its predevelopment



1 levels in the vicinity of our well field is the  
2 vacant space in to which we would put the  
3 recharge water. Because of our integrated local  
4 water supply plan, and leaving water that we did  
5 not remove with our native water rights it  
6 results in a much higher aquifer; and,  
7 therefore, little to no room for the recharge of  
8 water from the ASR project.

9 Q. How important is the ability to establish and  
10 recover ASR credits as a component of the City's  
11 plan to meet demand for rural water during an  
12 extended drought?

13 A. The ability to produce and recover ASR credits  
14 is critical to the City of Wichita's 50 year  
15 water supply plan. In non drought conditions we  
16 have sufficient supplies in our native water  
17 rights to meet customer demand throughout the 50  
18 year planning period. However, in terms of  
19 extreme drought conditions and prolonged drought  
20 conditions we'll not have sufficient water to  
21 meet customer demand, and that's where the water  
22 that will be produced by ASR will be utilized to  
23 meet that demand.

24 Q. And while we are on the topic of planning, Mr.  
25 Pajor, who is the decision making authority that

1 decides policy issues for purposes of the City's  
2 drought planning?

3 A. Policy issues for the utility are decided by the  
4 City Council as the governing body.

5 Q. So the choice between using, say, a 2%  
6 exceedance or a 1% exceedance drought, a design  
7 drought for planning, would that also be a  
8 policy decision for the City Council?

9 A. Yes, it would.

10 Q. You were present through the testimony of John  
11 Winchester, weren't you?

12 A. Yes.

13 Q. What is the most important aspect of John  
14 Winchester's testimony?

15 A. I think Mr. Winchester provides the foundational  
16 information that we, as a utility, need to have  
17 in order to understand the risks that drought  
18 presents to us going forward to meeting the  
19 demands of our customers. And what we need to  
20 have in terms of capacity for raw water supply  
21 and the ability to treat and deliver that water  
22 and meet our customers in those extreme  
23 conditions.

24 Q. Mr. Pajor, if you would turn in the purple  
25 binder.

1 A. (Witness reviews document).

2 Q. Under tab of strategic plan. And then behind to  
3 the strategic plan follow-up plan document  
4 beginning on Page 25 behind that tab.

5 A. Okay.

6 Q. What is that document that we are looking at  
7 there?

8 A. This is a document that is a reproduction of the  
9 PowerPoint presentation that was utilized with  
10 the City Council in July of 2014 regarding  
11 strategic planning work that they had  
12 undertaken.

13 Q. Does it go all the way back through the, to the  
14 discussion heading in the lower right on Page  
15 37?

16 A. (Witness reviews documents). Yes, it does.

17 MR. McLEOD: I will hand this to the  
18 reporter to have it marked as Exhibit 9.

19 (City Exhibit 9 was marked for  
20 identification by the Reporter.)

21 BY MR. McLEOD:

22 Q. Mr. Pajor, just for clarity, is the printed  
23 material shown on the reverse of that 37th page  
24 is that actually part of this document that we  
25 just marked as Exhibit 9 (indicating)?

1 A. (Witness reviews documents). No, it is not.

2 MR. McLEOD: I will offer Exhibit 9 for  
3 admission as identified by the witness as staff  
4 briefing for the City Council on recommendations  
5 for this strategic plan.

6 THE HEARING OFFICER: Any objections?

7 MR. STUCKY: Can I voir dire with just  
8 one question?

9 THE HEARING OFFICER: Okay.

10 MR. STUCKY: Mr. Pajor, were you  
11 involved in any of these discussions that help  
12 lead to the strategic plan?

13 A. Yes.

14 MR. STUCKY: No objection.

15 THE HEARING OFFICER: Exhibit 9 will be  
16 admitted.

17 BY MR. McLEOD:

18 Q. Mr. Pajor, do pages 28 to 31 of the presentation  
19 include a section on water supply?

20 A. Yes, that's correct.

21 Q. And did you also personally participate in the  
22 discussions that related to that section of the  
23 recommendations?

24 A. Yes, sir, I did.

25 Q. Was the main focus here on expansion of water

1 supply to enable the City to last through a 1%  
2 exceedance drought without having to impose  
3 stage 3 and stage 4 restrictions under the  
4 City's drought plan?

5 A. Yes, that's correct.

6 Q. Looking at Page 28, what did staff expect the  
7 City could accomplish by funding a supply option  
8 to increase supply by ten million gallons a day  
9 coupled with annual conservation of .35 percent?

10 A. The objective was to be able to reduce to an  
11 absolute minimum the number of days during a  
12 severe drought event in which customers would be  
13 subjected to the restrictions that are contained  
14 in our drought response plan, specifically in  
15 stage 3 and stage 4 of that plan.

16 Q. Was it the conclusion or belief of staff that if  
17 they accomplished those goals they could extent  
18 the City's 1% drought protection by some amount?

19 A. Yes. With the implementation of that additional  
20 water we would be able to reduce considerably  
21 the impact on our customers and eliminate during  
22 the 50 year planning period, eliminate stage 3  
23 and stage 4 conditions for our customers.

24 Q. How far in to the future could we expand that  
25 protection with these alternatives?

1 A. With those alternatives the 50 year planning  
2 period of the current water supply plan would be  
3 covered.

4 Q. What were the water supply alternatives that  
5 were under consideration?

6 A. We looked at the possibility of obtaining  
7 treated water from the El Dorado reservoir, from  
8 the City of El Dorado. We looked at the  
9 possibility of well water supply from the  
10 El Dorado reservoir. And we looked at  
11 improvements that could be made in the Aquifer  
12 Storage and Recovery Project.

13 Q. What did the City Council ultimately determine  
14 as among those alternatives?

15 A. City Council directed that we would pursue the  
16 ASR alternative.

17 Q. Looking at the cost comparison in the lower  
18 right corner on Page 30 what was the cost  
19 estimate for those improvements?

20 A. \$421 million dollars.

21 Q. And note, too, for that comparison table  
22 reflects the City was unable to confirm with  
23 El Dorado that the ten million gallons per day  
24 from El Dorado reservoir would be available  
25 exclusively to Wichita during a 1% drought. Was

1           that a problem with the El Dorado alternatives?

2       A.    Yes, absolutely.

3       Q.    Was that because the point of adding the supply  
4           source was to specifically protect against  
5           shortages in the 1% drought?

6       A.    That is correct.  The only time that we need  
7           additional water supply for the next 50 years is  
8           during that extreme drought event, and that's  
9           when we could not be assured we could have  
10          access to that water.

11      Q.    Did the existing findings and orders for the  
12          City's applications to appropriate water  
13          associated with Phases I and II of the ASR  
14          project contain any constraint on lowering  
15          groundwater levels to create physical recharge  
16          capacity?

17      A.    No.

18      Q.    Do they contain presently any cap on the  
19          quantity of physical recharge credits that could  
20          be accumulated?

21      A.    No.  There is no cap as to how many credits we  
22          could accumulate, under the existing conditions.

23      Q.    Is it possible, therefore, for the city  
24          operating within its existing ASR permit  
25          conditions to draw on its existing water rights

1 in the Equus Beds well field to lower  
2 groundwater level in the well field and still  
3 create physical recharge capacity and storage  
4 for the ASR system?

5 A. It is indeed consistent with the requirements of  
6 the existing permits, and it is the only way we  
7 have identified to produce ASR credits today.

8 Q. Is there a limit on the amount of ASR recharge  
9 credits that the City can withdraw in a year  
10 under the existing permits?

11 A. Yes.

12 Q. What is that limit?

13 A. I don't recall.

14 Q. In order to achieve optimum conditions for  
15 physical recharge, to what level would the City  
16 need to reduce the water levels of the Equus Bed  
17 well field?

18 A. We would need to reduce it to the 1998 levels in  
19 order to have an affected area that we could  
20 recharge with our current project.

21 Q. And what would be the amount of recharge  
22 capacity we would expect to create with that?

23 MR. STUCKY: I will object to this line  
24 of questioning. I am not sure we heard any  
25 expertise on the modeling that was performed by



1 the City with this witness, and his testimony in  
2 that regard has to do with modeling projections;  
3 and I am not sure this witness did anything in  
4 that regard.

5 MR. McLEOD: I can tell you the witness  
6 did not do any modeling. But the question, I  
7 think, is not seeking that, but rather simply  
8 seeking the witness' understanding of what we  
9 might hope to accomplish by taking the water  
10 levels down to the 1998 levels in terms of  
11 gallons per day that would allow a recharge.

12 THE HEARING OFFICER: Is there a way  
13 you can rephrase that's clearly within his  
14 domain?

15 MR. McLEOD: I don't know. Possibly  
16 not. Let's skip that one.

17 BY MR. McLEOD:

18 Q. Mr. Pajor, rather than lowering groundwater  
19 levels in the Equus Bed well field to create  
20 physical recharge capacity and storage for the  
21 ASR system, has the City proposed an alternative  
22 that would allow to accumulate recharge credits  
23 without having to reduce existing water levels?

24 A. Yes, we have.

25 Q. Is that basically an alternate recharge

1 accounting method that could operate during full  
2 aquifer conditions?

3 A. Yes, when there is water available in the Little  
4 Ark.

5 Q. So part of the concept would be there would have  
6 to be water there that the City could draw,  
7 treat and inject, if there were storage capacity  
8 available to receive it?

9 A. Yes. And we would, indeed, under this  
10 alternative, we would withdraw it from the  
11 water, we would treat it as we would for  
12 injection.

13 Q. So part of the basis of the proposal also would  
14 be the quantity of level the City diverts that  
15 can't be physically recharged through the ASR  
16 system would be sent to the City's main  
17 treatment plant for direct city use to meet city  
18 demands?

19 A. Yes.

20 Q. And would the water that was left in the  
21 aquifer, as the result of utilizing that Little  
22 Arkansas River flow, then form the basis of the  
23 calculation of an ASR aquifer maintenance credit  
24 under the City's proposal?

25 A. It would indeed, because that would be water we

1 would not be removing to meet customer demand  
2 because we were able to meet it with the treated  
3 water from the ASR project.

4 Q. And that proposed aquifer maintenance credit,  
5 would it have similar characteristics to the  
6 current physical recharge credits that exist in  
7 the ASR system?

8 A. Yes, it would.

9 Q. If you would look at the black binder behind the  
10 tab of summarizing documents.

11 A. (Witness reviews documents).

12 Q. Do you see a, and let me back up to this staff  
13 briefing.

14 MR. McLEOD: Did I have this admitted,  
15 Exhibit 9?

16 THE HEARING OFFICER: I thought so.

17 MR. PAJOR: You did, but you didn't  
18 deliver it.

19 MR. McLEOD: I thought I had.

20 MR. PAJOR: I tried to tell you but you  
21 turned the other direction.

22 BY MR. McLEOD:

23 Q. In that tab behind the black binder, Mr. Pajor,  
24 is there a document dated January 23rd, 2018,  
25 that is captioned testimony provided by Senate

1 Agriculture and Natural Resources?

2 A. Yes, there is.

3 Q. What is that document?

4 A. This is written testimony that I provided to  
5 briefing that was given to the Senate  
6 Agriculture and Natural Resources Committee of  
7 the Kansas legislature on January 23rd of 2018.

8 Q. And the document refers on its last page to an  
9 attachment handout entitled, Equus Bed Aquifer  
10 and Preparing Wichita For Drought, Proposed  
11 Changes. Would that handout be this graphic  
12 document which is near the start of the summary  
13 documents tabbed section?

14 A. Yes, sir, that's the attachment that was  
15 provided with that testimony.

16 Q. What was the purpose of this document?

17 A. Of the attachment?

18 Q. Of the letter and attachment.

19 A. Okay. The entire testimony to the senate  
20 committee, and the attachment, was to provide an  
21 update on our Aquifer Storage and Recovery  
22 Project, how we were transitioning the project  
23 from its original envisioned mission of moving  
24 water from wetter years to water to dryer years,  
25 to much more of a long term project because

1 customer demand had changed over the course of  
2 time so that demands were muted compared to  
3 original projections. And the aquifer was  
4 physically much fuller, near predevelopment  
5 levels, compared to when ASR was first initiated  
6 as a project. So we wanted to bring them  
7 up-to-date on those changing conditions and the  
8 reasons why we were now looking at ASR  
9 specifically to generate credits over a long  
10 time horizon for relatively rare use during  
11 extreme drought events.

12 Q. In terms of changes that the City was  
13 considering and proposing at the time, was the  
14 City asking legislatures to do anything here or  
15 simply informing them of what the City was going  
16 to be asking the Division of Water Resources to  
17 do?

18 A. It was simply the latter. It was simply an  
19 update to them as to our project and to advise  
20 them of the work that we were engaged to take  
21 forward to the Division of Water Resources and  
22 the chief engineer.

23 MR. McLEOD: Let's mark this as an  
24 exhibit.

25 (City Exhibit 10 was marked for

1 identification by the Reporter.)

2 BY MR. McLEOD:

3 Q. On the second page, Mr. Pajor, of the briefing  
4 letter that we have marked as Exhibit 10, it  
5 provides a short discussion of how changes in  
6 actual and projected customer demands led to  
7 that repurposing of the ASR facilities. Can you  
8 explain a little bit more of that.

9 A. Yes. As originally envisioned we were going to  
10 need the ASR project to meet the more routine  
11 needs of our customers, earlier in the 50 year  
12 planning period. As we revisited the  
13 projections of demand we saw that because of a  
14 reduction in the per capita demand for  
15 customers, due to improved water efficiencies  
16 within the use of our customers, by our  
17 customers, and because of additional changes to  
18 water usage, that as the result of that we now  
19 had sufficient water in our native water rights  
20 to meet that customer demand in all but extreme  
21 drought conditions for that entire 50 year  
22 period.

23 Q. And so with that, what became the only purpose  
24 for which the City still needed to be able to  
25 recover ASR credits?

1 A. To meet the demand of our customers in prolonged  
2 extreme drought events, to avoid needing to go  
3 in to stage 3 and stage 4 restrictions within  
4 our drought response.

5 Q. In the course of extreme drought is it  
6 reasonable to expect to have any abundant flows  
7 in the river that we could treat and inject in  
8 the ASR facilities?

9 A. That would not be expected.

10 Q. So really the capacity, to generate recharge  
11 credits in a time of abundance, would be the  
12 characteristic of the ASR project that would  
13 make it a potential mitigation tool; is that  
14 correct?

15 A. That is correct.

16 Q. Back in the third page of the letter did you  
17 identify for the committee some factors that  
18 limit the viability of ASR as a drought  
19 remediation tool?

20 A. Yes, we did.

21 Q. Looking first at the existing basis for recharge  
22 credits, is the problem there that under current  
23 conditions the City would actually have to  
24 partially deplete the aquifer in order to inject  
25 water to accumulate credits?

1 A. Yes. That is the problem.

2 Q. And I will ask this subject to later foundation  
3 because I know you didn't do the drought  
4 modeling, but you have seen the City's drought  
5 modeling of the 1% drought; is that correct?

6 A. Yes, absolutely.

7 Q. And in the proposal that has been admitted as  
8 Exhibit 1 there is a table that reflects how the  
9 City believes demands would need to be allocated  
10 to manage resources on an integrated basis in a  
11 1% drought, is that right?

12 A. Yes.

13 Q. In that table in the proposal, what does the  
14 City believe it would need as a minimum  
15 accumulation of credits to meet the supply  
16 demands during a 1% drought?

17 A. I would have to refer to that table to determine  
18 that number.

19 Q. I think that may be table 2.5.

20 A. (Witness reviews documents).

21 Q. Sir, is there actually a row in that table, Mr.  
22 Pajor, that shows the projected amount of  
23 credits the City would need to take for a model  
24 eight year drought?

25 A. Yes, there is.



1 Q. What's the total of that row going across for  
2 the credits the City would need to use during  
3 that event?

4 A. There is not a total provided here, but it would  
5 be 5,651 plus 19,907 plus 6,732 plus 15,552 plus  
6 1,980 acre feet.

7 Q. So if you did a little quick addition, can you  
8 tell us what that adds up to?

9 A. Well, almost 50,000.

10 Q. And comparing that to what the City has now, as  
11 of the date of the chief engineer's April 11th,  
12 2019, order, which correct me if I am wrong, is  
13 the most current, setting forth available  
14 recharge credits for the end of the year 2016,  
15 was the quantity of credits available to the  
16 City only 6,372.2 acre feet?

17 A. That is correct.

18 Q. To achieve a cumulation of 50,000 acre feet or  
19 more in credits, would it follow that the  
20 aquifer would have to be maintained in a  
21 partially depleted state potentially for a  
22 period of years or decades?

23 A. Under our current permit conditions, yes, that's  
24 what we would have to do in order to get the  
25 physical recharge credits.

1 Q. Because it would take quite awhile to accumulate  
2 that many credits; is that correct?

3 A. It would indeed.

4 Q. If a drought occurred during the time the  
5 aquifer was maintained in that partially  
6 depleted state, what would be the impact in  
7 terms of dealing with that drought?

8 A. Under our current permit conditions the  
9 difficulty would be that because we risk in  
10 later years of a protracted drought not being  
11 able to recover our credits when we need them to  
12 meet customer demand, we would have to take the  
13 credits out earlier in a drought event. And as  
14 we go through a drought event, we don't know how  
15 long it is going to last.

16 Q. Would having the aquifer in a partially depleted  
17 state to accommodate physical recharge also put  
18 the City in the posture of going in to a drought  
19 with lower starting levels in the aquifer?

20 A. Yes. Which would disadvantage all water users  
21 in the area well field.

22 Q. Would that also have the affect of depleting  
23 water levels in the aquifer to the 1993 levels  
24 quicker?

25 A. Yes.

1 Q. And again, recognizing that you haven't done  
2 modeling, you have seen some of the modeling  
3 result that suggest that would occur within the  
4 first two years of the drought; is that correct?

5 A. Yes.

6 MR. STUCKY: I will object again to  
7 this line of questioning. We are talking about  
8 projections based on the model, and projections  
9 as far as what future needs are, what the impact  
10 of the aquifer would be, number one, it's  
11 outside of the scope of the expert report that  
12 was furnished; but, number two, it was already  
13 indicated that this expert doesn't have any  
14 credentials or experience on as it relates to  
15 the modeling itself. And actually didn't help  
16 with the model itself. So I think we have tried  
17 to be lenient to the questioning, but this is  
18 just going way outside of the scope of his  
19 expert report. And there is no foundation for  
20 it.

21 MR. McLEOD: So responding to that, let  
22 me point out the basic fact, which should not be  
23 lost on participants in the hearing, that Mr.  
24 Pajor is not simply an expert witness. Mr.  
25 Pajor is in management role with the City where

1 he has served for a period of many years, and  
2 has the ability to testify to the facts known to  
3 him and beliefs and policy judgments of the City  
4 as well as things that are covered as his expert  
5 opinions in his expert report.

6 So I think it's completely permissible  
7 to ask Mr. Pajor about the projections that he  
8 has seen that reflect, even though he didn't do  
9 the modeling, that the City expects and is  
10 making policy based on the expectation that it  
11 will lose its ability to recover those credits  
12 in the second year of the drought. The  
13 important consideration being here, not whether  
14 the modeling is right, wrong or indifferent, but  
15 whether Mr. Pajor, in city management, believes  
16 that to be the case because that's going to  
17 inform their action based on policy judgment.

18 MR. STUCKY: If it's only for Mr.  
19 Pajor's knowledge on that subject and not for  
20 the truth of the matter asserted, we'll withdraw  
21 the objection, I guess, if it's only limited for  
22 that limited purpose.

23 THE HEARING OFFICER: Will there be  
24 witnesses that form foundation for what he, what  
25 the City was relying on?

1 MR. McLEOD: I expect later on we'll  
2 have witnesses to testify about all the modeling  
3 of the 1% drought and what showed for the 1%  
4 drought.

5 THE HEARING OFFICER: You may proceed.

6 BY MR. McLEOD:

7 Q. And to go back and cover something based purely  
8 on facts observable, Mr. Pajor, you were present  
9 with the City in a management role in 2011 and  
10 2012, weren't you?

11 A. Yes, I was.

12 Q. What happened in 2011 and 2012 with respect to  
13 drought conditions in the aquifer?

14 A. During that time period the region experienced a  
15 significant reduction in precipitation received  
16 compared to averages. And we experienced, as a  
17 utility, considerable increase in customer  
18 demand for water, especially seasonal water use  
19 during that period of time. And we were  
20 experiencing a significant decline in the Cheney  
21 surface reservoir that was becoming concerning  
22 as to our ability to meet customer demand, had  
23 those conditions persisted more than the two  
24 years that it did.

25 Q. And in the aquifer, in that two year drought,

1 Mr. Pajor, what happened to the water levels in  
2 the aquifer during that two year drought?

3 A. During that two year drought our drawing on that  
4 aquifer was not substantially different, but the  
5 other water rights holders obviously were  
6 increasing their water use because of the  
7 climate conditions.

8 Q. Did water levels decline below the 1993 levels  
9 in that drought?

10 A. No.

11 Q. Did we recover any credits in that drought?

12 A. No.

13 Q. Did going through the experience of that two  
14 year drought, and experiencing the conditions at  
15 Cheney and in the aquifer, have an impact on the  
16 City's drought policy and planning?

17 A. Absolutely it did. Because as we were reporting  
18 to the City Council and to the City manager the  
19 conditions at Cheney Reservoir, there was  
20 increasingly a concern for the fact that we did  
21 not have a structured drought response plan in  
22 place at that time. It was unclear as to  
23 exactly how we were going to manage our way  
24 through that process.

25 Q. And I think you had indicated earlier, Mr.

1 Pajor, in your testimony that one of the other  
2 problems with the existing conditions is the  
3 threat of losing the ability to recover credits  
4 makes the City take them early in the first two  
5 years of drought.

6 A. Yes.

7 Q. So we have, therefore, the twin problems that we  
8 are starting with lower levels, if we have to  
9 keep the aquifer depleted to enable recharge,  
10 plus we get to the 1993 levels faster and the  
11 City is under pressure to take those credits  
12 early, does the City even know in the first two  
13 years if it needs those credits for supply  
14 purposes?

15 A. No. And no one can know that. Because until  
16 you are further along in time you can't  
17 determine how long the drought is going to  
18 persist or how severe it is going to be until  
19 after it's over really.

20 Q. And you had indicated there is an aggregate  
21 limit on the City's ability to withdraw credits,  
22 although you didn't know what the limit was. If  
23 the City managed over a period of years to  
24 accumulate credits beyond the amount it is able  
25 to withdraw, would the City then have to make a

1 decision as to what to do with some of its  
2 credits even in the very first year of the  
3 drought?

4 A. Yes. It certainly could be the case.

5 Q. Again, looking back to the table in the proposal  
6 in Exhibit 1, that showed that model, 1% drought  
7 scenario, what does the City think it would  
8 actually need to use in credits in the first  
9 year of the drought?

10 A. We don't anticipate that we would need to use  
11 any of the credits in the first year of the  
12 drought.

13 Q. So for supply purposes, no credits?

14 A. Right, no credits.

15 Q. But if the City had credits accumulated beyond  
16 its annual ability to withdraw, the City might  
17 be forced to take credits in that year, though  
18 it doesn't need them?

19 A. Yes, that could certainly be the case.

20 Q. And if you look at the second year, what does  
21 the City think it would have to take in the  
22 second year of the drought?

23 A. 5,651 acre feet.

24 Q. Not even as much as the City has accumulated in  
25 credits currently; is that correct?



1 A. Correct.

2 Q. But the City would have to make a decision on  
3 its full accumulation in that year because of  
4 the threat of losing the ability to recover them  
5 in the second year?

6 A. Under our existing permit conditions, yes.

7 Q. Is there any reason the City would take any  
8 credits in the first year of a drought or more  
9 than the 5,651 acre feet in the second year,  
10 apart from the consequence that credits not  
11 taken would become unrecoverable for the  
12 duration of the drought?

13 A. No.

14 Q. I think you alluded to this, but does the City  
15 have any way of knowing in the first or second  
16 year of a drought whether that drought is  
17 ultimately going to be a three year drought, a  
18 four year drought or a six year 1950s drought,  
19 or an eight year 1930s dustbowl drought or  
20 exceeding a megadrought of the 20th century?

21 A. We don't have any way of knowing.

22 Q. I am going to give you a couple of hypotheticals  
23 to illustrate a point. And assume with me for  
24 purposes of the hypothetical that the limit on  
25 the City's ability to take credits in a given

1 year is 19,000 acre feet, and that the City has  
2 accumulated, for purposes of a hypothetical,  
3 38,000 acre feet in credits. And a drought  
4 comes along. The City takes 19,000 acre feet in  
5 drought year one, 19,000 acre feet in drought  
6 year two, to prevent the credits being stranded.  
7 And then it turns out that it's only a two year  
8 drought. The City takes all the credits and the  
9 drought is over.

10 In that scenario, with the aquifer  
11 depletion exacerbated by a withdrawal of 38,000  
12 acre feet of credits, even though the City could  
13 have managed to supply needs with 5,651 acre  
14 feet of credits, how is anyone benefited by  
15 that?

16 A. I don't think they would be benefited by that.  
17 That's why the existing permit conditions are  
18 not ideal for properly managing the aquifer.

19 Q. Looking now to look at the other end of drought  
20 duration. Let's this time have a scenario in  
21 which the city accumulated 38,000 acre feet in  
22 credits and takes 19,000 acre feet each year in  
23 drought years 1 and 2 to prevent the credits  
24 being unrecoverable. So that 38,000 acre feet  
25 is gone from the aquifer. Water levels in the

1           aquifer then decline to 1993 levels, does that  
2           38,000 acre feet magically come back when those  
3           water levels decline below the 1993 levels?

4       A.    No.

5       Q.    So the 38,000 acre feet is still gone, the  
6           drought ultimately turns out to be a six year  
7           1950s drought.  In this scenario, if the City  
8           had been allowed to wait and pump the 38,000  
9           acre feet of credits in drought years three and  
10          four, even though the water levels were then  
11          below the 1993 levels, would the impact of that  
12          38,000 acre foot withdrawal on water levels at  
13          the end of the drought be any different?

14      A.    Could you repeat the question, please.

15      Q.    So the question is, if the City had been allowed  
16          to wait and pump the 38,000 acre feet of credits  
17          in drought years three and four, instead of one  
18          and two, even though the levels were below the  
19          1993 levels in years three and four, would the  
20          cumulative impact of that 38,000 acre foot  
21          withdrawal on water levels at the end of the  
22          drought be any different because they were three  
23          and four instead of one and two?

24      A.    No, no, no, they would not.

25                   MR. STUCKY:  I am going to object and

1 ask for foundation as far as how the witness  
2 knows the answer to this question.

3 MR. McLEOD: It's a hypothetical  
4 question.

5 A. It's a hypothetical question. If the water is  
6 gone, the water is gone.

7 MR. McLEOD: I would argue that's  
8 actually a common sense analysis and not  
9 particularly a matter of expertise as well. If  
10 the City draws a 38,000 acre feet in years one  
11 and two, it's gone. And at three and four, it's  
12 still gone. At the end of the drought it's  
13 still gone. If I drank this bottle of water  
14 now, somebody coming in the room an hour from  
15 now wouldn't know if I drank that water five  
16 minutes ago or if I drank that 9:00 o'clock this  
17 morning.

18 MR. STUCKY: With due respect, I think  
19 the aquifer is lot more complex than a bottle of  
20 water. It is subject to river flows, it is  
21 subject to recharge from rain water, it's  
22 subject to differences as drought persists. I  
23 mean, there is a whole, it's subject to the  
24 nature of the rock layers, and it is subject to  
25 the clay layers as far as infiltration what it

1           could look like. There are all these factors  
2           that influence this answer, that's why we are  
3           modeling this. I think it matters, it's  
4           different than a bottle of water.

5                       MR. McLEOD: I would say that goes to  
6           the weight, if they have criticisms of the  
7           hypothetical and the answer, rather than the  
8           admissibility to the witness' answer.

9                       THE HEARING OFFICER: Will you have an  
10          expert witness address these types of questions?

11                      MR. McLEOD: We'll have somebody going  
12          through the modeling later on. As to all the  
13          factors argued by Mr. Stucky, I don't know that  
14          anybody is going to try to go through how some  
15          factor would allegedly made this result  
16          different if the water was drawn in years three  
17          and four versus one and two. I am not persuaded  
18          of the soundness of that argument that was  
19          articulated.

20                      THE HEARING OFFICER: Well, it gives me  
21          pause. That may be an appropriate topic for  
22          cross examination. I will let the question and  
23          answer stand, but there is some validity in  
24          expecting an ability to delve deeper into these  
25          type of issues, and we have had very specific

1 testimony before now. So you may proceed.

2 MR. McLEOD: I will try to avoid  
3 additional detailed hypotheticals.

4 BY MR. McLEOD:

5 Q. Mr. Pajor, would adjusting the lower index  
6 limits help to keep the aquifer fuller by  
7 allowing the City to wait longer before it has  
8 to decide whether to draw credits in a drought?

9 A. Yes, it would because those longer lived drought  
10 events occur less frequently.

11 Q. Which is a point I probably skipped fast, but  
12 you were here during Mr. Winchester's  
13 presentation this morning?

14 A. Yes.

15 Q. He had modeled a range of droughts of various  
16 durations and exceedance probabilities in the  
17 table, which I think is an attachment C to the  
18 proposal there in his technical memorandum. If  
19 you could refer to that table.

20 A. (Witness reviews documents).

21 THE HEARING OFFICER: I am sorry, which  
22 exhibit was that?

23 MR. McLEOD: It would have been one of  
24 the earlier exhibits Mr. Winchester had shown.  
25 It is on Page 6 of 7 of attachment C to the

1 proposal, Exhibit 1.

2 BY MR. McLEOD:

3 Q. Looking at that table, Mr. Pajor, do you see  
4 where the droughts include two year duration of  
5 droughts?

6 A. Yes, I do.

7 Q. Is that drought identified in the table as a 10%  
8 drought?

9 A. Yes, it is.

10 Q. And I think this ties to what you were saying  
11 about frequency of small droughts and large  
12 droughts. Would that 2% drought, as modeled  
13 there in Mr. Winchester's table there as 10%  
14 drought, be expected to occur about once a  
15 decade versus the approximate hundred year  
16 occurrence of a 1% drought?

17 MR. STUCKY: I guess I will object to  
18 this for two reasons. Number one, I don't think  
19 this expert has any kind of expertise on this  
20 subject matter, number one. But, number two, I  
21 think it's cumulative, and we already had  
22 testimony on this table.

23 MR. McLEOD: We had testimony on the  
24 table, but I don't think that it went in to the  
25 point that we can expect two year droughts to

1 occur a lot more frequently than hundred year 1%  
2 droughts. And that's a question for Mr. Pajor  
3 he could probably answer it from his own  
4 personal experience.

5 A. I would also answer it from the experience of a  
6 utility management. This table reinforces, it  
7 quantifies the estimate of a two year duration  
8 drought being a much higher probability event  
9 than an eight year duration drought.

10 Q. Would the longer decisional period that the City  
11 would derive from lower index limits, be likely  
12 for that reason to result in less frequent use  
13 of credits, because the City would not be under  
14 pressure in the first two years of the drought  
15 to take credits it doesn't need?

16 A. Yes. Absolutely.

17 THE HEARING OFFICER: So, pardon me,  
18 but as I understand it, because I don't think I  
19 still resolved the objection, if I understand  
20 correctly, Mr. Pajor is answering from the  
21 standpoint of your view as a city manager, and  
22 city planner, is that what it is? I am getting  
23 objections because this is not his area of  
24 expertise, but what he would do in his role in  
25 city management is his area of expertise.



1                   So I am trying to navigate the  
2                   distinction between those.

3                   MR. McLEOD: Yes, I would say again, in  
4                   that regard whether even Mr. Winchester is right  
5                   or wrong about anything, is less significant  
6                   than that the City believes that he is right,  
7                   and the City believes and will be making policy  
8                   based on the notion as presented by Mr.  
9                   Winchester's work, that that two year drought is  
10                  going to occur about ten times as commonly as a  
11                  1% exceedance drought. So it really is, from a  
12                  managerial perspective, the important part is  
13                  the City believes it to be true, whether it's  
14                  true or not. Whether Mr. Winchester is a  
15                  complete hack, the City will be making its  
16                  policy decisions that it is accurate good  
17                  science.

18                  THE HEARING OFFICER: Which would not  
19                  be a good outcome. But I understand, I  
20                  understand the differentiation. I am concerned  
21                  that we do end up with solid information as to  
22                  whether or not the foundational information is  
23                  reliable and accurate.

24                  So if Mr. Pajor is not testifying to  
25                  that point, then he can testify as to what his

1 interpretation or what the City's interpretation  
2 of this information is.

3 MR. McLEOD: I think we are relying on  
4 Mr. Winchester for the calculation of all of  
5 those exceedance periods as they are spread in  
6 the table. And Mr. Pajor is not making his own  
7 opinion about the science.

8 THE HEARING OFFICER: So perhaps we  
9 could be very careful about how we couch the  
10 language, so that we can try to keep those two  
11 descriptions separate.

12 Mr. Stucky, will that help?

13 MR. STUCKY: Yes. I have no objection  
14 whatsoever if Mr. Pajor wants to testify as to  
15 what decisions the City is making with regard to  
16 planning; but to the extent there is any  
17 opinions on whether or not it's good or bad  
18 planning, I don't think any testimony like that  
19 should be permitted.

20 THE HEARING OFFICER: I think we could  
21 probably draw that distinction, if we are  
22 careful, Mr. McLeod.

23 BY MR. McLEOD:

24 Q. To say it again, whose role is it to do this  
25 planning for the City of Wichita?

1 A. Well, the policy decisions are made by City  
2 Council. The director and his staff are  
3 responsible for implementing those policies and  
4 day-to-day administration of the utility  
5 including decisions on water supply sourcing.

6 Q. Thank you. You previously touched upon, in your  
7 testimony, the point about current aquifer  
8 levels resulting chiefly from the City's  
9 integrative water supply plan, the change and  
10 use of resources that it made in '93 to '98, of  
11 which has been an operating strategy for  
12 sometime now, to integrate management and  
13 optimize water resources. Does the City's  
14 commitment to that effort apply equally both in  
15 times of abundance and in times of drought?

16 A. Yes, it does.

17 Q. Is the City's policy preference with respect to  
18 the aquifer to keep the aquifer as full as the  
19 City can keep it?

20 A. Yes. The experience is much less loss than the  
21 surface reservoir and those are our two primary  
22 water supplies.

23 Q. Is the City committed to making water resource  
24 management practices that are governed by  
25 outcome based results, focused on the long term

1 sustainability of all the available water  
2 supplies?

3 A. Yes.

4 Q. Does the City's proposal, in fact, contemplate  
5 the City will continue to maintain an ASR  
6 operational priority focused on generational  
7 physical recharge credits where and when that's  
8 possible to do?

9 A. Absolutely.

10 Q. And to tack on perhaps a qualifier to the  
11 question, where and when it's possible to do  
12 without having to deplete the aquifer to create  
13 the opportunity?

14 A. That would be the ideal, yes.

15 Q. Does the ability to develop and recover aquifer  
16 maintenance credits contribute to a management  
17 strategy focused on maintaining the maximum  
18 quantity of water possible in aquifer storage  
19 within the Equus Beds well field?

20 A. Yes, it does, because it doesn't require us to  
21 remove water from the aquifer to inject physical  
22 recharged credit water under our existing permit  
23 conditions.

24 Q. If you would turn to table 3-1 in the proposal.

25 A. (Witness reviews documents).

1 Q. This has been admitted as Exhibit 1.

2 MR. STUCKY: Is there a page number?

3 THE HEARING OFFICER: It looks like  
4 3-11.

5 Q. Mr. Pajor, as to the resources that are in the  
6 columns on the left of that table, do you  
7 believe that they will, in fact, experience the  
8 benefits that are spelled out in the column on  
9 the far right of the table, if the City can use  
10 aquifer maintenance credits as proposed?

11 A. Yes. If we are allowed to use aquifer  
12 maintenance credits the benefits of the column  
13 on the right can be achieved for all four of  
14 those resources.

15 MR. STUCKY: Again, I will clarify, is  
16 it his belief that these can be achieved? Or is  
17 he testifying to the fact that they are actually  
18 are achieved? I want to draw a distinction  
19 between the two.

20 Q. Mr. Pajor, can you answer both of those? Do you  
21 believe that they will be achieved and is it  
22 your testimony that they will be achieved?

23 A. It is my belief that they will be achieved and  
24 my testimony is that they will be achieved  
25 provided we have the capability of operating our

1 projects with aquifer maintenance credits.

2 MR. STUCKY: And, again, it is our  
3 opinion that his conclusions are based on the  
4 modeling that exists in the proposal. So to  
5 reach these ultimate conclusions you would have  
6 to have expertise on that subject matter. So  
7 it's the same kind of distinction we were  
8 drawing before.

9 Q. So, Mr. Pajor, let's look at that first box in  
10 the upper right, and let's just look at that  
11 foundationally. As the benefits stated there it  
12 begins with the line, ASR Phase I permits would  
13 not be modified. In fact, part of the proposal  
14 is that the ASR Phase I permits would not be  
15 modified; is that correct?

16 A. That's correct.

17 Q. That's a fact, that's not a matter of your  
18 expertise, is it?

19 A. That's correct.

20 Q. That's a feature of the proposal that has been  
21 admitted as Exhibit 1. And would have been  
22 ascertainable since the time the proposal was  
23 submitted. Then the premise below that,  
24 regional groundwater levels can be managed at  
25 the benefit of water quality and all users.

1 Without particular expertise, you have already  
2 said you know that having the AMCs relieves the  
3 requirements for the City to pull the aquifer  
4 down to deplete it, to create physical recharge  
5 credits; is that correct?

6 A. Yes.

7 Q. And doesn't that represent and constitute  
8 management of the aquifer to the benefit of  
9 water quality and users?

10 A. It does in my opinion, yes.

11 Q. And that's not really a matter of expertise, as  
12 much as a matter of looking at the fuller  
13 aquifer and knowing that it's better?

14 A. Correct.

15 MR. STUCKY: Again, because there is so  
16 much that comes in to play here. We are talking  
17 about a fuller aquifer. You know, we are  
18 talking about the impact of this proposal during  
19 a time of drought, that is a different  
20 statement. We are talking about the impact of  
21 this proposal when the aquifer is full. The  
22 second statement, as shown on the screen up  
23 there, refers to water quality. There is no  
24 expertise as to groundwater quality. To try to  
25 give some sort of blanket assertion that these

1 benefits will be achieved, again is way outside  
2 of the scope of this expert's ability to  
3 testify.

4 THE HEARING OFFICER: In terms of this  
5 particular line of questioning with this table I  
6 have to agree with Mr. Stucky. So I think we  
7 need to strike those questions and have you move  
8 on.

9 MR. McLEOD: Okay.

10 BY MR. McLEOD:

11 Q. Mr. Pajor, at least as to the big benefit of not  
12 having to deplete the aquifer, if we have  
13 maintenance credits, does that result in a  
14 fuller aquifer?

15 A. Yes.

16 Q. Because we don't have to deplete it?

17 A. Yes.

18 Q. And if the City doesn't have to take credits,  
19 when the credits aren't needed, doesn't that  
20 result in a fuller aquifer?

21 A. Yes, it would.

22 Q. In the existing permit conditions, Mr. Pajor,  
23 are there restrictions that prevent the City  
24 from injecting recharged water in to the aquifer  
25 when water levels are within ten feet of ground



1 level?

2 A. Yes, there are.

3 Q. By virtue of that restriction, is it effectively  
4 impossible for the City operating consistent  
5 with the permit conditions to cause an  
6 unreasonable increase in water levels by  
7 injecting recharge?

8 A. Yes, it is. And I could expound on that a bit.  
9 The problem is as the aquifer gets very near to  
10 either predevelopment conditions or the permit  
11 conditions, the ten foot below ground surface,  
12 while there may be that last percent or two of  
13 space that's available, because we are not  
14 allowed to exceed that ten foot below ground  
15 surface, the ability to put the water in at our  
16 recharge wells and not go above the ten feet  
17 while trying to get the water out to that last  
18 couple of percent of the saturated zone is very  
19 problematic.

20 And the analogy I use is when you are  
21 trying to get the last half of gallon of gas in  
22 your tank and the pump keeps clicking off. It's  
23 very hard to get that last half gallon forced in  
24 there because it's so full. The tank is so  
25 full.

1 Q. So that restriction is actually a limitation on  
2 the City's ability to even achieve a full  
3 recharge that would be permitted by its permits?

4 A. Yes.

5 Q. The way that that alternative maintenance,  
6 excuse me, aquifer maintenance credits are set  
7 up in the City's proposal, does the existence of  
8 an aquifer maintenance credit inherently propose  
9 that a quantity of water necessarily, or  
10 necessary to meet that credit has been left in  
11 the aquifer by the City at an earlier period?

12 A. Could you repeat the question, please.

13 Q. Let me rephrase it a little this way. Is the  
14 basis of an aquifer maintenance credit in the  
15 City's proposal that the City has left a  
16 quantity of water in the aquifer, and instead of  
17 drawing that water has taken water that was  
18 available that could have been treated and  
19 injected, if there was physical recharge  
20 capacity in the aquifer, and used it as a direct  
21 supply source instead of drawing from the  
22 aquifer?

23 A. Yes. Including the treatment of that water.

24 Q. And in the proposed accounting method for  
25 aquifer maintenance credits, does the City

1 impute a leakage factor to water that's left in  
2 the aquifer by that mechanism?

3 A. Yes.

4 Q. And so if there is an AMC there, a credit that  
5 exists under that accounting method, does the  
6 existence of that credit depend on the City, in  
7 fact, having left water sufficient to satisfy  
8 that credit in an aquifer in an earlier period?

9 A. Yes.

10 Q. And does that fact on which is inherent in the  
11 definition and accounting method for aquifer  
12 maintenance credits, have a bearing on whether  
13 those credits or the drawing of those credits  
14 would create an unreasonable lowering of water  
15 levels in the aquifer?

16 A. Could you repeat that, please.

17 Q. Would the consideration that the water that's  
18 there representing the aquifer maintenance  
19 credit, is water that the City left there in a  
20 prior period?

21 A. Yes.

22 Q. Have a bearing on the question of whether  
23 aquifer maintenance credits could cause an  
24 unreasonable lowering of the aquifer?

25 A. Yes.

1 Q. And what would that bearing be?

2 A. Well, the aquifer maintenance credit is there  
3 because we didn't have to draw the aquifer down  
4 to make physical space to put that water in to.  
5 We were able to leave the aquifer full and still  
6 get the aquifer maintenance credit.

7 Q. And when that credit is drawn, does it really  
8 become more of a timing of when the City is  
9 using the water rather than how much water the  
10 City is using?

11 A. Yes.

12 Q. Does the proposal include any kind of a cap that  
13 would apply to accumulation of all recharge  
14 credits where no cap exists on the current  
15 permits?

16 A. Yes, it does.

17 Q. What is that proposed cap?

18 A. I believe it is 120,000 acre feet.

19 Q. Do you know what the basis was for proposing  
20 that quantity as a cap?

21 A. I believe it's based on the estimated 60,000  
22 acre feet we need for the 1% drought protection  
23 during the 50 year planning period.

24 Q. In correspondence by the chief engineer, and  
25 also in the proposal, more than one party have

1 used the expression functional equivalent to  
2 parallel these aquifer maintenance credits to  
3 the existing physical recharge credits. Can you  
4 explain what is behind that and what the  
5 reasoning there is.

6 A. The reasoning is that we are still diverting  
7 water from the Little Arkansas River. We are  
8 still treating water through the ASR treatment  
9 plant. And we are taking that water to meet  
10 customer demand in town, rather than taking the  
11 equivalent amount of water out of the aquifer.

12 Q. If the City has to deplete the aquifer, and then  
13 physically inject recharge to create a credit,  
14 how is the impact different on the resulting  
15 quantity of water than if the City had just left  
16 that water in the aquifer and taken its source  
17 from the river instead?

18 A. Well, if we don't have to take the water out of  
19 the aquifer and can instead use the water from  
20 the river, then we don't have to create enough  
21 space in the aquifer to take the recharge water.

22 Q. If the City is able to use its aquifer  
23 maintenance credits, and let me back up. If the  
24 City's proposed modifications to its permits are  
25 approved, and it is able to use the aquifer

1 maintenance credits, and delay any decisions to  
2 draw credits during droughts, to maintain the  
3 aquifer at a fuller level, does that have an  
4 impact on risk of impairment for wells adjacent  
5 to the City's well field?

6 A. Yes, it does, it is a favorable impact because  
7 there is more water in the aquifer.

8 MR. STUCKY: I will object once again  
9 to this testimony. There is no expertise on  
10 impairment that has been established for this  
11 witness.

12 MR. McLEOD: Does Mr. Pajor need to be  
13 an expert on impairment to know that a fuller  
14 aquifer reduces the risk of impairment? I am  
15 not thinking that's an expert opinion, just  
16 something that's within a realm of common sense.

17 THE HEARING OFFICER: I tend to agree  
18 with Mr. Stucky.

19 MR. McLEOD: Okay.

20 BY MR. McLEOD:

21 Q. Mr. Pajor, looking in the purple binder to the  
22 tab labeled fluoride simulations.

23 A. (Witness reviews documents).

24 Q. What is the first document that appears there  
25 behind that tab, maybe the only document.

1 A. Preliminary simulation of chloride transport in  
2 the Equus Beds aquifer and simulated affects of  
3 well pumping and artificial recharge and  
4 groundwater flow and chloride transport near the  
5 City of Wichita, Kansas, 1990 through 2008 USGS  
6 report open file 2014-1162.

7 MR. McLEOD: I will have the reporter  
8 mark this as an exhibit.

9 (City Exhibit 11 was marked for  
10 identification by the Reporter.)

11 MR. McLEOD: I will offer this for  
12 admission.

13 MR. STUCKY: No objection to the  
14 document itself.

15 THE HEARING OFFICER: I am sorry, no  
16 objection?

17 MR. STUCKY: No objection to the  
18 document itself.

19 THE HEARING OFFICER: Exhibit 10 will  
20 be admitted.

21 MR. McLEOD: I think it's actually 11.

22 THE HEARING OFFICER: Pardon me.  
23 Exhibit 11 is admitted.

24 BY MR. McLEOD:

25 Q. Mr. Pajor, in the course of your service with

1 the City, have you become aware of chloride  
2 migration issues that affect the Equus Beds well  
3 field?

4 A. Yes, I have.

5 Q. What are the primary sources that have been  
6 identified?

7 A. Relative to the City of Wichita's well field two  
8 primary sources. The Burrton chloride plume,  
9 which is a remnant of past oil and gas  
10 production and development activities, and  
11 natural chloride from the Arkansas River.

12 MR. McLEOD: I will offer Exhibit 10  
13 now to make a point that was reported to the  
14 legislative committee about the original purpose  
15 of ASR Phase I.

16 MR. OLEEN: Mr. McLeod, could you  
17 please just tell me where again in the binder to  
18 find Exhibit 10?

19 MR. McLEOD: Exhibit 10 is behind the  
20 summary documents tab in the black binder. And  
21 actually consists of the January 23rd letter  
22 with an attached handout.

23 MR. OLEEN: Thank you.

24 THE HEARING OFFICER: Any objections to  
25 Exhibit 10?



1 MR. STUCKY: No objection.

2 THE HEARING OFFICER: Exhibit 10 will  
3 be admitted.

4 BY MR. McLEOD:

5 Q. Mr. Pajor, part of the information that was  
6 presented to the legislative committee within  
7 that Exhibit 10 had to do with the original  
8 purpose and function of the ASR Phase I project  
9 as it was related to these chloride migration  
10 issues. Can you explain that for us.

11 A. Yes. Phase I in particular of the ASR project,  
12 was intended and designed to create a barrier to  
13 reduce the migration of the Burrton chloride  
14 plume towards the vicinity of the City's well  
15 field, and that's, that was and is its primary  
16 purpose.

17 Q. Is that original purpose part of the reason that  
18 the City's current proposal doesn't contemplate  
19 withdrawal of AMCs from the Phase I recovery  
20 wells or any adjustments to the lower index  
21 levels for those Phase I facilities?

22 A. Yes, that's correct.

23 Q. The USGS report we marked as Exhibit 11, dating  
24 from 2014, is it the most recent USGS report  
25 that you are aware of concerning migration in

1 the area of the oil field?

2 A. Yes.

3 Q. Does the basic point of the reported effort is  
4 to figure out chlorides have been living under  
5 existing conditions and what would happen under  
6 various alternative conditions?

7 A. That's correct.

8 Q. Looking back at pages 70 and 71 of the report  
9 have the authors set out their summary of what  
10 they did and the conclusions that they reached?

11 A. They have.

12 Q. Was part of it to model the baseline scenario  
13 based on the existing pumping and recharge for  
14 the study period?

15 A. Yes, it was.

16 Q. Did they also model the scenario with no pumping  
17 to determine what would happen if the chlorides  
18 were not influenced by any well operations?

19 A. Yes.

20 Q. What other alternative pumping and recharge  
21 scenario did they simulate?

22 A. They simulated a double pumping, in which the  
23 Wichita municipal pumping would be doubled, and  
24 existing irrigation scenario would continue.

25 And they also had a double Wichita pumping with

1 no irrigation pumping scenario.

2 Q. Did they model a scenario with additional ASR  
3 recharge?

4 A. Yes, they did.

5 MR. STUCKY: I will pause here and say  
6 I think the document speaks for itself as far as  
7 what these authors concluded. I mean, if the  
8 witness doesn't have expertise on these  
9 subjects, then I don't think we need to read  
10 from this particular document. If the expert  
11 has some sort of expertise on the subject matter  
12 of this expert report, then I suppose he can  
13 testify to what's in it. But if it is merely  
14 reading this document, it's already admitted in  
15 to evidence.

16 MR. McLEOD: After we do go through the  
17 conclusions, that were reached by the modelers,  
18 I would like to ask Mr. Pajor a couple of  
19 questions about them, and I think that  
20 developing it in his testimony is an easier way  
21 than just putting it in the record in the  
22 document and having people read it later.

23 MR. STUCKY: I will withdraw the  
24 objection, subject to later foundation. Go  
25 ahead and proceed, Mr. McLeod.

1 MR. McLEOD: And I am certainly trying  
2 not to read any expansive material myself on the  
3 report.

4 BY MR. McLEOD:

5 Q. Mr. Pajor, in any of the modeling scenarios did  
6 the chloride stop moving towards the well field?

7 A. No.

8 Q. In the no pumping scenario did the Burrton plume  
9 chlorides in the upper layer actually move  
10 toward the well field 120 feet per year faster  
11 than the baseline scenario?

12 A. Yes, that's correct.

13 Q. And in that same scenario, was the chloride  
14 movement from the Arkansas River slowed at all?

15 A. No. It was not.

16 Q. What about the scenario where they model doubled  
17 the City's existing municipal pumping?

18 A. In that case the chloride moved from the river  
19 and from the Burrton salt plume towards the well  
20 field.

21 Q. What was the change in the rate of movement?

22 A. Simulated chloride plume from the river near the  
23 southern end of the well field moved north  
24 toward and into the well field at approximately  
25 810 feet per year in layer 1, 150 feet per year

1 faster than in the baseline scenario; 870 feet  
2 per year in layer 2, 90 feet per year faster  
3 than in the baseline scenario; and 740 feet per  
4 year in layer 3, 80 feet faster per year than in  
5 the baseline scenario.

6 Q. So in that modeling we are talking about an  
7 adverse impact for chloride migration, but it is  
8 expressed by the authors its speed per year of  
9 movement. Correct?

10 A. That's correct. And similar study for the  
11 Burrton chloride plume.

12 Q. And if that went on for a period of eight years  
13 we would still be talking about feet per year;  
14 is that correct?

15 A. Yes.

16 Q. Did the report also ultimately conclude that the  
17 Burrton plume will continue moving towards the  
18 well field area regardless of pumping activity  
19 and that other alternatives may ultimately be  
20 needed to deal with that?

21 A. Yes, it did.

22 Q. Would the total city pumping that was projected  
23 in the 1% drought in the table 2.5 in the  
24 proposal, result in a pumping of the magnitude  
25 that's assumed in the double pumping

1 simulations?

2 A. I don't know.

3 MR. McLEOD: I don't have further  
4 questions for the witness.

5 THE HEARING OFFICER: DWR.

6

7 CROSS EXAMINATION

8 BY MR. OLEEN:

9 Q. Mr. Pajor, I want to clarify something about my  
10 understanding in the City's Exhibit Number 1,  
11 the proposal itself. Table 2-5. Once you have  
12 had a chance to locate that.

13 A. (Witness reviews documents). Okay.

14 Q. Do I understand that, sir, that this table 2-5  
15 lists the modeled inputs and variables by  
16 particular, well, by each of the years of the  
17 simulated eight year prolonged drought; is that  
18 correct?

19 A. Yes, that's my understanding.

20 Q. And so the row that says total EBWF & ASR (AF),  
21 is that a combination of the City's estimated  
22 modeled usage of both what I will call, quote,  
23 native water rights and ASR recharge credits?

24 A. Yes, that's correct.

25 Q. And by native, by quote, native water rights, to

1 be clear for the record, when I say that, I mean  
2 the City's five, quote, normal groundwater  
3 rights in the aquifer. Is that your  
4 understanding of my usage of the term?

5 A. Yes.

6 Q. Okay. So then looking, well, let me back up.  
7 Do I understand then that in order to determine  
8 the number of recharge credits that the model  
9 estimated would be used in each of the eight  
10 years, you always subtract 40,000 from the  
11 numerical view in the row that says EBWF & ASR  
12 (AF)?

13 A. That's correct, because that is, as you have  
14 characterized, our native rights each year.

15 Q. And under this model simulation, it was assumed  
16 that the City would use its entire 40,000 acre  
17 feet of native water rights first, before  
18 proceeding to use any recharge credits, if it  
19 even needed to; is that correct?

20 A. Yes, sir, that is correct.

21 Q. So, for example, then, because in the same row  
22 we have been talking about, total EBWF, year  
23 one, we never exceed the 40,000 acre feet so the  
24 City, under this model simulation, was able to  
25 meet its needs entirely from the native water

1 rights; and, thus, there is a zero in the row  
2 below indicating that no recharge credits were  
3 needed to be used that year; is that correct?

4 A. That is correct.

5 Q. This is a long way of me trying to confirm what  
6 I think is a typo in one of these particular  
7 boxes. And that is, if you look in year five,  
8 the row for total EBWF & ASR (AF), gives a  
9 figure of 56,579 combined native and recharge  
10 credits used; is that correct?

11 A. Correct.

12 Q. The row then below, that also corresponds to  
13 that year five, states that there would,  
14 therefore, be 15,552 recharge credits. Well,  
15 let me rephrase that. Sorry.

16 That out of that total 56,579 acre feet  
17 used in year five that 15,552 are recharge  
18 credits. Is that what it is saying?

19 A. That's what the table is presenting, yes.

20 Q. But am I correct that that should actually be  
21 16,579 recharge credits used in that particular  
22 year?

23 A. That would be my correction also.

24 Q. And it would appear to me, in comparing those  
25 two rows, doing my quick math, that that is the



1           only year for which there is a typo on the  
2           actual recharge credits estimated it would need  
3           to be used, is that your understanding?

4       A.    Yes, from reviewing those two rows I would  
5           agree.

6                       MR. STUCKY:  One objection here.  We'll  
7           certainly stipulate there is a typo on this  
8           table, and we have the same thing; but I guess  
9           the objection is, I don't know if this witness  
10          has any expertise as to how these calculations  
11          were generated and whether or not the witness  
12          can render an opinion as far as which number is  
13          incorrect in that particular column of the  
14          table.

15                      MR. OLEEN:  If it would appease Mr.  
16          Stucky I will phrase my question in the terms of  
17          a mathematical question, as opposed to Mr. Pajor  
18          stating that he knows for a fact that that's why  
19          there is a numerical difference.  Or if Mr.  
20          Stucky just wants to stipulate there is a typo  
21          and agree with what Mr. Pajor has said we can  
22          move on.

23                      MR. STUCKY:  I will stipulate there is  
24          typo or incorrect number of some sort.

25                      MR. OLEEN:  Thank you.

1 BY MR. OLEEN:

2 Q. So now that I understand Mr. Pajor, that that's  
3 a typo, the point though in looking at the sum  
4 of all the boxes in this table 2-5, the row that  
5 says City of Wichita ASR credit pumping, do I  
6 understand that, that that row shows that there  
7 is 50 some thousand recharged credits that the  
8 City anticipates would be, would need to be used  
9 over an eight year period such as this?

10 A. Yes.

11 Q. And so that is the total amount over eight years  
12 and in no singular year would anywhere near  
13 120,000 be proposed to be used, according to  
14 this table?

15 A. That is correct.

16 MR. OLEEN: No further questions.

17 Thank you.

18 THE HEARING OFFICER: Thank you. Mr.  
19 Stucky.

20 MR. STUCKY: Thank you.

21

22 CROSS EXAMINATION

23 BY MR. STUCKY:

24 Q. All right, Mr. Pajor, I am going to ask a few  
25 follow-up questions on your testimony. First of

1 all, when you started your testimony you  
2 indicated that you have served on the Equus Beds  
3 Groundwater Management Boards; is that correct?

4 A. Yes.

5 Q. And you indicated that as part of your board  
6 duties sometimes you would have to consider an  
7 analysis on impairment; is that right?

8 A. Yes.

9 Q. And would it also be correct that as far as  
10 whoever conducted the analysis on the impairment  
11 it would have been the staff of the Groundwater  
12 Management District, would that be a true  
13 statement?

14 A. That is correct.

15 Q. As you are sitting here today, you personally  
16 didn't generate or conduct any analysis on  
17 impairment, would that be a true statement?

18 A. Yes, it would.

19 Q. And, likewise, you said that as part of your  
20 duties sitting on the groundwater management  
21 board that sometimes you look at permits or  
22 applications. Do you recall that testimony?

23 A. Yes, I do.

24 Q. Would it actually be a correct statement to say  
25 that by the time it gets to the Board level for

1 the Board to consider, and we are actually  
2 looking at appeals, would that be a true  
3 statement? We are looking at appeals of initial  
4 applications?

5 A. I am not certain that that would always be the  
6 case.

7 Q. But most of the time, would that be the case?

8 A. I think most of the time, that would be the  
9 case.

10 Q. All right. Now, you also testified as to your  
11 credentials. As I listened carefully, is it  
12 true that you don't have any education or  
13 experience in hydrology; is that correct?

14 A. Yes, it is.

15 Q. And is it also correct that you don't have any  
16 education or experience in hydro geology?

17 A. Also correct.

18 Q. And is it also correct that you don't have any  
19 personal experience as far as with modeling,  
20 when it comes to conducting models or running  
21 models, would that be a true statement?

22 A. Yes, it would.

23 Q. So when it comes to any kind of technical  
24 conclusions or aspects of the City's proposal,  
25 that would be outside of the realm of your

1 expertise, would that be a true statement?

2 A. Yes, it would.

3 MR. STUCKY: Just so we have a clean  
4 record here, since the benefit of this hearing  
5 is for the public to hear all the testimony, and  
6 not be misled by any kind of conclusions that  
7 are made, I would ask that any kind of opinions  
8 that were, that focused on any kind of technical  
9 conclusions in the City's proposal be stricken  
10 and the witness' testimony.

11 THE HEARING OFFICER: I would prefer to  
12 have a specified request. So if there are  
13 particular questions and answers that you would  
14 like stricken, I would like to know which ones.

15 MR. STUCKY: Any kind of testimony as  
16 far as the future benefits to the aquifer,  
17 whether or not water quality would be impacted,  
18 things of that nature, I would ask that it be  
19 stricken.

20 THE HEARING OFFICER: I know some  
21 objections you made were to future foundation,  
22 which I assumed meant future witness foundation.  
23 Was I wrong on that?

24 MR. STUCKY: It would be subject to  
25 future foundation. That's correct. That a

1 future foundation can be laid, but our opinion  
2 is that there was no opinion for this witness to  
3 reach those ultimate conclusions.

4 THE HEARING OFFICER: So I am confused.

5 MR. STUCKY: Sorry, I hadn't had a  
6 chance at that point to voir dire the witness to  
7 his full conclusions in that regard and now I  
8 have had that opportunity.

9 THE HEARING OFFICER: I understand.  
10 But what I was thinking was that you were  
11 requesting was that your objections would be  
12 contingent on future foundation being  
13 established by other witnesses. Was I wrong  
14 about that?

15 MR. STUCKY: We'll leave the objection  
16 in that regard and I will proceed.

17 THE HEARING OFFICER: I am not trying  
18 to direct you in a different position, but I  
19 don't want to be ruling on a blanket request of  
20 a general subject description. If I am going to  
21 be willing to strike particular questions and  
22 answers, then I need to know exactly which ones  
23 we are talking about.

24 MR. STUCKY: I will walk through it.

25 THE HEARING OFFICER: You can do that

1 or come back to that if your future foundation  
2 doesn't happen, or however you want to handle  
3 it. I want to give you a fair process with  
4 that.

5 MR. STUCKY: I will walk through it.

6 BY MR. STUCKY:

7 Q. Now, to start out, you talked about your  
8 testimony, and I am trying to find the exhibit.  
9 I think it was Exhibit 11.

10 MR. STUCKY: Was Exhibit 10 the  
11 testimony that was delivered; is that correct?

12 BY MR. STUCKY:

13 Q. Okay. I ask that you flip to Exhibit 10 and  
14 that's in your testimony it is in the black  
15 binder under the green tab.

16 A. I have it.

17 Q. Okay. Now, on the first page of that particular  
18 exhibit, I believe admitted in to evidence, was  
19 this blue cover sheet (indicating).

20 A. Correct.

21 Q. And then after that I see that there was some  
22 question and answers. Was that also introduced  
23 as part of your testimony?

24 A. To the legislative committee?

25 Q. Yes.

1 A. No, it was not.

2 Q. Do you have any knowledge as far as the  
3 conclusions that is rendered in those question  
4 and answers?

5 A. I have knowledge of them, I have read them. I  
6 participated in the review of them.

7 Q. Well, let's walk through them just a little bit  
8 mirror. First question is, says, why is the  
9 City pursuing these changes now. I would ask  
10 that you walk to the bottom of that question and  
11 answer, second sentence from the bottom it says:  
12 Higher aquifer levels at the beginning of a  
13 drought means the impact would be less severe  
14 and fewer wells will dry up. Does that language  
15 assume that with the City's approach there is  
16 the possibility that at least some wells could  
17 dry up?

18 MR. OLEEN: I am sorry to interrupt,  
19 Mr. Stucky, it was not my understanding that  
20 this document was part of the exhibits brought  
21 in.

22 THE HEARING OFFICER: I can't even find  
23 it.

24 MR. OLEEN: I don't think it was, but I  
25 could be mistaken.



1 MR. McLEOD: It was not part of the  
2 exhibit. I don't mind counsel asking questions  
3 about did and if he wants to offer it, that's  
4 fine, too.

5 MR. STUCKY: I will offer it  
6 independently. I would like to go ahead and  
7 offer it as exhibit.

8 (Exhibit 12 was marked for  
9 identification by the Reporter.)

10 MR. STUCKY: I am going to move to  
11 formally introduce Exhibit 12.

12 THE HEARING OFFICER: Any objections?  
13 No. Exhibit 12 will be admitted.

14 BY MR. STUCKY:

15 Q. To go back to my question, it says higher  
16 aquifer levels at the beginning of the drought  
17 means the impact will be less severe and fewer  
18 wells will dry out. And that's under these  
19 statements as far as the justification for the  
20 city pursuing changes with the ASR; is that  
21 correct?

22 A. Yes. This was done as part of our public  
23 outreach to make public aware of why we were  
24 asking for the changes and what those changes  
25 were.

1 Q. Does that statement assume under the City's  
2 proposal at least some wells could dry up, is  
3 that what that's assuming?

4 A. No. That's pointing out the fact that without  
5 the changes that we are pursuing there is an  
6 increased risk of wells drying up because we'll  
7 have lower aquifer levels because we have to  
8 draw the aquifer down under our existing permit  
9 conditions to create physical recharge credits.

10 Q. Do you have any opinion or expertise or  
11 testimony as far as whether any wells will dry  
12 up during the withdrawal of aquifer maintenance  
13 credits during a drought? Do you have any  
14 opinion on that?

15 A. No, I do not.

16 Q. Okay. I would like you to flip to Page 4 of  
17 that particular document. In the fourth  
18 paragraph from the second sentence it says: The  
19 recharge credits do not renew, they go away when  
20 they are either pumped or when they seep out of  
21 the basin storage area. So is it correct that  
22 at least some of the ASR credits will seep out  
23 of the aquifer?

24 A. Some of the ASR credits will seep out of the  
25 aquifer, yes, it's true of today's permit and it

1 is true in under this proposal.

2 Q. Do you have any knowledge or expertise as to how  
3 those percentages would be calculated as far as  
4 the seepage would look like?

5 A. It would be part of the annual reporting  
6 process.

7 Q. Did you help conduct that annual accounting?

8 A. No.

9 Q. I would like to move back to Exhibit 10, which  
10 was your testimony on March 1st, 2018. On the  
11 second page of that testimony it refers to, it  
12 refers to an average of 88% of the saturated  
13 thickness and to 80% of the saturated thickness  
14 and that's referring to if the minimum index  
15 level is lowered, is that what that testimony is  
16 referring to?

17 A. Yes, it is.

18 Q. Do you have any knowledge or expertise as to how  
19 those percentages were arrived upon?

20 A. Do I have any knowledge or expertise?

21 Q. Yes. Did you help to do the analysis --

22 A. No, I did not.

23 Q. -- to get to those percentages?

24 A. No.

25 Q. Okay. As you were sitting here today you would

1 not necessarily be able to defend those  
2 particular percentages; is that correct?

3 A. Personally?

4 Q. Yes. Personally.

5 A. No.

6 Q. I want to back up to actually the prior page of  
7 this testimony, and it says that on about the  
8 second full paragraph it says, and I am sorry,  
9 second page of the testimony, my mistake, Mr.  
10 Pajor, second page of the testimony, under the  
11 second full paragraph it says: ASR was  
12 originally intended to accomplish three  
13 objectives. Do you see where I am reading?

14 A. I do, yes.

15 Q. And in the third, can you read for the record  
16 the third objective. As you wrote it there.

17 A. Work to reduce the extent of the hole that had  
18 been created in the Equus Beds in the vicinity  
19 of the 55 square miles of the City of Wichita  
20 well field. This hole resulted from over  
21 appropriation in this area prior to the  
22 establishment of safe yield practices for the  
23 granting of water rights in the Equus Beds  
24 aquifer.

25 Q. So, first of all, would you acknowledge the fact

1           that the area of the City's well field is over  
2           appropriated?

3       A.    Yes, I would.

4       Q.    And, second of all, would you acknowledge the  
5           fact that safe yield calculations, and safe  
6           yield practices, are a good practice in the  
7           aquifer?

8       A.    Yes, I would.

9       Q.    I am going to ask you to flip a little further  
10          in that notebook to your next testimony, which  
11          was on January 23, 2018.  It is in that black  
12          notebook.

13      A.    That's where I thought I was.

14      Q.    There is --

15      A.    You were in the house and I am in the senate  
16          now.

17      Q.    Yes.

18      A.    You want me to go to the senate?

19      Q.    That's correct.

20      A.    Okay.

21      Q.    Are you on that document now?

22      A.    Yes, sir.

23      Q.    Now, toward the very bottom of that document it  
24          says that our current forecast for water demands  
25          from our customers for the next 50 years is

1           considerably different than what was projected  
2           in the early 1990s. Is that a true statement?

3       A.    I am sorry. You are at the end of the  
4           testimony?

5       Q.    End of the first page of the testimony.

6       A.    (Witness reviews documents). Correct. Correct.

7       Q.    So let's talk just a moment about projections of  
8           water in the 1990s. First of all, would you  
9           acknowledge that the projections that were made  
10          in the 1990s for the demands of water for the  
11          City turned out to be off base? In other words,  
12          they were incorrect in the projections?

13      A.    I would not characterize them that way, no.

14      Q.    Let me ask you this, do you have any opinion as  
15          far as whether or not the projections were on  
16          track in the early 1990s? Or is it your  
17          testimony that the projections made in the early  
18          1990s for future water requirements of the City  
19          were correct? Which is your testimony?

20      A.    That they were correct in the sense that that  
21          was the analysis using the available data at  
22          that point in time when those projections were  
23          done. They are certainly different than the  
24          projections of today. That's the point of the  
25          sentence.

1 Q. Well, first of all, would you acknowledge that  
2 for the purposes of the City's model, the  
3 projections that have been made, that have been  
4 made for the City's water need are important?  
5 Would you acknowledge that?

6 A. Yes, I would.

7 Q. So how did you come up, did you have any opinion  
8 or expertise as far as how the City came up with  
9 its projections for future water needs based on  
10 medium growth in the proposal?

11 A. Do I have any --

12 Q. Do you have any knowledge or expertise as far as  
13 how that was calculated or how you came up with  
14 the City's future water needs?

15 A. Not the particulars of the calculation, just the  
16 general description of the scenarios and the  
17 methodology that was used, yes. But I did not  
18 make the calculations.

19 Q. And just a moment ago you indicated that the  
20 City is going to need approximately 60,000 acre  
21 feet of water. Was that your testimony?

22 A. I believe I said 50, I would go with 60 just as  
23 being closer.

24 Q. And what was the basis for that number? I guess  
25 I was unclear with how you calculated or derived

1           that number.

2       A.    I added up the ASR acre footage that we used  
3           over the protracted drought that was in the  
4           table that we looked at.

5       Q.    And once again, with respect to that particular  
6           table you didn't help to create that table or  
7           you didn't help to make the calculations that  
8           led to that table; is that correct?

9       A.    That is correct.

10                       MR. STUCKY:  Let's go to Exhibit 1, the  
11           proposal itself.  Exhibit 8, since nothing was  
12           numbered we are having trouble finding the  
13           exhibits.  May I approach?

14           BY MR. STUCKY:

15       Q.    I will move to a different line of questioning,  
16           we are trying to locate the particular exhibit.  
17           Okay.  Let's move back to the proposal.  Can you  
18           turn to figure 12 in the proposal.

19       A.    (Witness complies).

20       Q.    Which is on Page 3-3.

21       A.    Okay.

22       Q.    Just a moment ago you rendered some opinions as  
23           far as trends that are shown on that particular  
24           table; is that correct?

25       A.    Yes.



1 Q. Did you help to calculate any of this data or  
2 help create this table?

3 A. No, I did not.

4 Q. Now, the red, the red shows city artificial  
5 recharge of groundwater, is that correct on this  
6 table, those on this table. The thick red line  
7 at the very bottom.

8 A. Thick red line at the bottom, not the reddish  
9 brown line.

10 Q. The red line above it, shows estimated  
11 groundwater use for agricultural irrigation from  
12 study area; is that right?

13 A. Yes, it is.

14 Q. I think a moment ago you testified that it your  
15 view that irrigation use has gone up based on  
16 your opinion on this particular graph, is that  
17 what you testified to?

18 A. Yes.

19 Q. Have you done any further analysis on this  
20 particular graph to reach that conclusion? In  
21 other words, have you tried to further average  
22 out what this trend shows over time with the  
23 straight line or any kind of analysis of that  
24 nature?

25 A. No, I have not.

1 Q. So your testimony just a moment ago was based  
2 solely on your opinion having just glanced at  
3 this table; is that correct?

4 A. On a simple read of it, yes.

5 Q. Okay. And is it also true that this table ends  
6 in the year 2013?

7 A. It appears to me to go further than 2013.

8 Q. Okay. But at the very least --

9 A. But barely past 2013, yes.

10 Q. So it doesn't have at least the last three or  
11 four years of data; is that correct?

12 A. Correct. Correct.

13 Q. And I think you already answered this, but as  
14 far as how the 120,000 acre feet was calculated,  
15 as far as a cap for the city, you didn't help to  
16 come up with that particular number?

17 A. That is correct.

18 Q. And so you don't have a specific opinion as to  
19 whether or not that's a viable cap, is that  
20 true?

21 A. I do have an opinion whether or not that's a  
22 viable cap, yes.

23 Q. Is it based on your experience and expertise in  
24 your opinion?

25 A. It's based on my review of those experts' work.

1 Q. But once again, you didn't perform any personal  
2 analysis or calculations on deriving that cap?

3 A. That is correct.

4 Q. You talked a little bit about 2011 and 2012  
5 data. And you indicated that the City didn't  
6 use credits during that particular drought; is  
7 that right?

8 A. Yes.

9 Q. And do you have any knowledge, as far as from a  
10 planning perspective, why that occurred?

11 A. Why we didn't use the credits?

12 Q. Yes.

13 A. We didn't see a need to use them.

14 Q. And why was that?

15 A. We did not use our full 40,000 acre feet, is my  
16 understanding.

17 Q. And you also indicated that during the years  
18 2011 and 2012 that you didn't go below the 1993  
19 levels, the aquifer didn't fall below the 1993  
20 levels; is that right?

21 A. Correct.

22 Q. Is it true that in the years 2011 and 2012 the  
23 Little Arkansas River dried up?

24 A. I couldn't testify to that.

25 Q. Okay.

1 A. I don't have that information.

2 Q. In your earlier testimony you talked about  
3 different solutions that the city could  
4 potentially use for its future water demands.  
5 Do you recall that testimony?

6 A. Yes, I do.

7 Q. And you indicated that one particular  
8 alternative was to use water from El Dorado  
9 reservoir. Do you recall that testimony?

10 A. No, sir, I don't. I recall two alternatives for  
11 using water from El Dorado.

12 Q. Two particular alternatives. One was to treat  
13 the water and one was to take untreated water  
14 from the El Dorado reservoir, were those the  
15 two?

16 A. To purchase treated water from El Dorado, yes.

17 Q. What was the reason why it would be so expensive  
18 to treat that particular water before it's used  
19 by the City?

20 A. That would be a question for the City of  
21 El Dorado's water utility.

22 Q. Is it possible to divert the water from  
23 El Dorado reservoir to the City and treat it  
24 within the city limits?

25 A. That was the raw water purchase option that we

1 evaluated.

2 Q. Does the City currently have the capability of  
3 treating that water within its city limits?

4 A. Yes.

5 Q. And so I guess my question is, on that table it  
6 indicated a significant difference between  
7 taking the raw water and taking the treated  
8 water from El Dorado reservoir. So I guess my  
9 question is, if the City has the capability of  
10 treating that water currently, why is there such  
11 a significant cost difference?

12 A. I don't have that answer.

13 Q. Fair enough. Now, in your purple notebook, in  
14 your purple notebook it's under the green tab  
15 it's called strategic plan.

16 A. (Witness reviews documents).

17 Q. Are you at that particular tab?

18 A. Yes.

19 Q. If you could flip with me one, two, three, four,  
20 five pages in to that particular document, and  
21 there is a document called Water Supply  
22 Planning. Do you see that document?

23 A. Yes.

24 Q. And on that particular document, it's about the  
25 third page of that document on Page 3 of that

1 water supply document. Do you follow where we  
2 are at?

3 A. Yes.

4 Q. Now, on this document it indicates that  
5 originally the City was considering nine options  
6 to meet its future water needs. Is that a true  
7 statement?

8 A. Yes, it is.

9 Q. Aside from El Dorado reservoir, you mentioned  
10 two options, and one was treated water from  
11 El Dorado reservoir and one was raw water from  
12 El Dorado reservoir. So that's two of the nine  
13 options. And I believe a third option was  
14 aquifer maintenance credits. What were the  
15 other six options that were considered by the  
16 City?

17 A. I am sure I cannot recall all six. One option  
18 was to take water from Cheney Reservoir to the  
19 ASR plant, treat it and inject it. I don't  
20 recall the other.

21 Q. Now, on that same particular page, on Page 3, so  
22 as you are sitting here today you don't have any  
23 recollection as far as whether or not those, why  
24 those other six options were discounted?

25 A. That's correct. But we, I do recall going

1 through a very deliberative process of creating  
2 that long list and whittling it down to the  
3 three we got to.

4 Q. Toward the bottom of that particular page it  
5 says treated El Dorado water as one of the  
6 options that was considered; is that right?

7 A. Yes.

8 Q. It says in that particular paragraph that if  
9 \$250 million were allocated to this project, the  
10 remaining funds would be used to prepay water  
11 purchase cost. So, in other words, does that  
12 language assume that taking water from El Dorado  
13 reservoir would actually cost less than \$250  
14 million?

15 A. No. This language comes from the proposed sales  
16 tax that would have generated more revenue  
17 during the time that it was in effect, than the  
18 water purchases that we would be making from  
19 El Dorado. So we would be making, we would be  
20 using that revenue from the proposed sales tax  
21 to purchase water for future delivery. That's  
22 what that sentence refers to, is my  
23 recollection.

24 Q. Okay. On the next page there is a table where  
25 it refers to coming up with the total of \$250

1 million to pay for water from El Dorado  
2 reservoir on that very next page; is that  
3 correct?

4 A. Yes.

5 Q. So what this document is purporting to show is  
6 that the cost to get water from El Dorado  
7 reservoir would cost the City roughly \$250  
8 million?

9 A. That's what the table indicates, yes.

10 Q. Now, I want to turn back to the previous page,  
11 the previous page it talks about ASR  
12 improvements that could be made. On the  
13 previous page under ASR improvements it says:  
14 Making those ASR improvements would require also  
15 \$250 million to cover the infrastructure cost;  
16 is that correct?

17 A. For that improvement.

18 Q. So at least what this document shows is that the  
19 cost of getting water from El Dorado reservoir  
20 and the cost of making those ASR improvements is  
21 roughly equal, would that be a true statement?

22 A. That's what the document indicates. It does not  
23 speak to the availability of the water.

24 Q. You have, as you indicated before, you served on  
25 the Equus Beds Groundwater Management Board and



1 I think you are familiar with the concept of  
2 multiyear flex accounts; is that correct?

3 A. Yes, I am.

4 Q. Did the City ever consider the possibility of  
5 using multiyear flex accounts as a planning  
6 resource, or a planning tool, to meet needs  
7 during a drought?

8 A. Yes.

9 Q. And if that option was considered why was that  
10 option not used or why was that option  
11 discounted in the City's analysis?

12 A. It was determined not to be workable.

13 Q. Why was it determined not to be workable?

14 A. I don't recall.

15 Q. Do you have any idea who would have testimony as  
16 far as why the multiyear flex account wasn't  
17 workable?

18 A. No, I don't.

19 Q. So as you are sitting here today, you know the  
20 MYFA was considered but it was discounted but  
21 you are not sure why, is that true?

22 A. It was discussed, that's right, it was  
23 considered.

24 Q. But as you are sitting here today you are not  
25 sure why it was discounted; is that correct?

1 A. It didn't work, but I don't know the details. I  
2 did not participate in the calculations.

3 Q. Okay. Is it possible for the city to, currently  
4 with the infrastructure the City has, is it  
5 possible for the City to recharge the aquifer  
6 and pump to the City at the exact same time as  
7 your infrastructure currently exists with  
8 respect to your recharge facility?

9 A. We have operational restrictions as to be able  
10 to do both of those at the same time.

11 Q. Now, what are those operational restrictions?

12 A. I cannot describe them accurately in detail.

13 Q. Theoretically if those operational, well, if the  
14 infrastructure was changed with respect to your  
15 recharge facilities, if that infrastructure  
16 would change, would it be possible to recharge  
17 the aquifer and also pump to the City at the  
18 same time, if that infrastructure was changed?

19 A. I don't believe I have the credentials or  
20 experience to speculate on an answer to that  
21 question.

22 Q. Let me ask you this, did the City ever analyze  
23 or try to consider what kind of costs would be  
24 involved in changing the infrastructure to allow  
25 the City to recharge at the same time that it's

1           pumping water to the city? Was that ever  
2           discussed by you?

3       A.    Not by me.

4       Q.    Has the City considered putting in to place  
5           additional recharge basins in the Equus Beds  
6           well field?

7       A.    Yes.

8       Q.    And why has that not occurred at this juncture?

9       A.    It's not something we are pursuing at the  
10           moment. It's something that we are still  
11           considering.

12      Q.    Okay.

13      A.    I am not sure how to answer beyond that.

14      Q.    If I were to, so has that been discussed to your  
15           knowledge at City Council meetings or anything  
16           of that nature at this juncture or has it just  
17           been discussed internally?

18      A.    I do not recall it being discussed at City  
19           Council meetings, that doesn't mean it hasn't  
20           been.

21      Q.    I am going to circle back to some earlier  
22           projections that were made by the City. And I  
23           believe all of our exhibit notebooks are up  
24           there; is that correct? We have an exhibit  
25           notebook and it's volume 6 in our, of our

1 exhibit notebooks. Do you have that document is  
2 in front of you?

3 A. Yes, I do.

4 Q. Circle back to our conversation a moment ago  
5 about future projections. In this particular  
6 document I ask that you flip to page 39. It's  
7 labeled as document 78 in our notebooks. And if  
8 I had told you that this was the testimony of  
9 David Warren with the City during ASR Phase I  
10 would you have reason to disagree with me?

11 A. I could neither confirm nor deny that.

12 Q. And, in fact, on page 39 there is a question  
13 about in the middle and it says: Mr. Warren,  
14 how does the City of Wichita water utility rank  
15 in terms of size with other cities in the State  
16 of Kansas? So at least as that question exists,  
17 does it appear that that question was being  
18 asked to David Warren?

19 A. It certainly appears that way.

20 Q. I would like to go to the last answer on that,  
21 could you read that answer on the bottom of page  
22 39?

23 A. As part of our study of water supply, of course  
24 you have got to look at demand projections. In  
25 the water supply plan there was a water demand

1 projection made in 1993 as a part of that  
2 report, and it projected that by 2050 the city's  
3 average day demand would be about 125 million  
4 gallons a day, and the maximum day demand would  
5 be about 250 million gallons a day. The City  
6 updated those demand in 1997 as a result of  
7 the --

8 Q. Proceed to the next page.

9 A. -- implementation of the water rate structure  
10 that I mentioned previously in this testimony.  
11 At that time, we adjusted those demands, and the  
12 average a day 2050 demand was down to about 112  
13 gallons a day, and the maximum day demand was  
14 down to about 225 million gallons a day. 2003,  
15 which was the most recently complete year that  
16 we have records for, the average day demand for  
17 Wichita was 55 million gallons a day, and the  
18 maximum demand was 107 million gallons per day.

19 I will mention that subsequent to that  
20 year --

21 Q. You can pause.

22 A. Thank you.

23 Q. Would you agree then that at least in the early  
24 1990s the projections made by the City as far as  
25 future water demands would change, would you

1 agree with that?

2 A. This appears to indicate that, yes.

3 Q. And I think a moment ago you indicated that  
4 water use by the City, since the early 1990s,  
5 has not significantly changed, was that your  
6 testimony?

7 A. Correct.

8 Q. But your model indicates that water use in the,  
9 by the City in the future, will be based on  
10 projected medium growth; is that right?

11 A. Yes.

12 Q. And so would you agree that based on what we  
13 have learned from this testimony, and what we  
14 have learned from the past, that trying to  
15 predict water use in the future is purely  
16 speculative, at best?

17 A. No.

18 Q. Would you agree that it's something, that they  
19 are projections we are guessing as to the future  
20 and it's not an exact science, would you agree  
21 with that?

22 A. I would characterize it as a forecast.

23 Q. And it's impossible to predict a forecast  
24 perfectly; is that right?

25 A. Yes, that's correct.

1 Q. And, in fact, in the past when the City made  
2 forecasts, as far as future water needs as  
3 indicated by that testimony, at least, those  
4 forecasts turned out to be incorrect; is that  
5 right? At least as that testimony indicates.

6 A. Yes.

7 Q. Now, I would like you to also flip in our  
8 exhibit notebooks to notebook Number 1.

9 A. (Witness reviews documents).

10 Q. Would you flip to what's labeled as Exhibit  
11 Number 7 in those notebooks, or at least tabbed  
12 as Number 7 in those notebooks.

13 A. Yes.

14 Q. Would you agree with me that this particular  
15 document is titled, The City of Wichita's  
16 Responses to Equus Beds Groundwater Management  
17 District Number 2 First Request For Admissions  
18 City of Wichita. Would you agree that that is  
19 what that document purports to be?

20 A. Yes.

21 Q. Now, in this particular document if we flip  
22 toward the end of the document. As you look  
23 through that document did you review those  
24 requests for admissions before they were  
25 provided to the district?

1 A. Quite possibly. I don't have a clear  
2 recollection of having done so. But it's quite  
3 possible.

4 Q. Now, I would ask that you flip to page number 7  
5 of that particular document. I am sorry. To  
6 question number 14 on that particular document.  
7 It says, admit or deny that there is not a  
8 definition of AMC or aquifer maintenance credits  
9 or statute or regulation. And the answer to  
10 that is admit. Would you agree with that?

11 A. Yes, sir.

12 Q. As you are sitting here today, would you also  
13 agree there is no statute or regulation that  
14 defines an aquifer maintenance credit?

15 A. Yes, sir.

16 Q. Would you also agree --

17 MR. McLEOD: I will object to asking  
18 the witness questions about laws and  
19 regulations. I think the hearing officer  
20 indicated she'll take judicial notice of laws  
21 and regulations and it's completely cumulative.  
22 The witness has no specific expertise to testify  
23 to laws and regulations.

24 BY MR. STUCKY:

25 Q. In your expert report you referred, subject to



1           what Mr. McLeod just said, in your expert report  
2           you talked about how AMCs are a functional  
3           equivalent of aquifer maintenance or ASR  
4           credits. Is that what you put in your report?

5           A. Yes.

6           Q. And just a moment ago Mr. McLeod said you have  
7           no experience in interpreting statutes and no  
8           experience in determining what the law should be  
9           in that regard. Did you hear the objection from  
10          Mr. McLeod a moment ago, or response a moment  
11          ago?

12          A. Yes, I did.

13          Q. Would you agree, based on what Mr. McLeod just  
14          said, it would be outside the scope of your  
15          expertise to render an opinion as to whether or  
16          not an aquifer maintenance credit is a  
17          functional equivalent of a different type of  
18          recharge credit. Would you agree with that?

19          A. Could you restate the question?

20          Q. To determine whether or not an aquifer  
21          maintenance credit is the functional equivalent  
22          of a traditional recharge credit, one would have  
23          to have, one would have to construe the statutes  
24          and regulations to reach that conclusion; is  
25          that correct?

1 MR. McLEOD: That in and of itself  
2 calls for a legal conclusion from the witness.  
3 It's quite possible Mr. Pajor only meant to  
4 suggest with the use of functional equivalent  
5 the two types of credits do the same thing.

6 Q. I guess my question is, do you have any legal  
7 training or expertise that based, that you base  
8 your conclusion, that you based your conclusion  
9 of functional equivalent on in your report?

10 A. No.

11 Q. Would you agree that with respect to strictly  
12 the accumulation of aquifer maintenance credits,  
13 that as aquifer maintenance credits are  
14 accumulated, no source water would be put in to  
15 the aquifer?

16 A. Yes.

17 Q. And would you also agree that with the use of  
18 aquifer, as aquifer maintenance credits are  
19 accumulated, strictly with respect to  
20 accumulating aquifer maintenance credits, there  
21 would be no physical recharge of the aquifer  
22 that would occur. Would you agree with that?

23 A. Yes.

24 Q. So, in fact, with respect to an aquifer  
25 maintenance credit, the City is asking for a

1 credit for water that's not pumped out of the  
2 aquifer, is that essentially what it is? Or  
3 pumped in to the aquifer.

4 MR. McLEOD: I think that's become  
5 compound enough I would ask counsel to restate  
6 it.

7 MR. STUCKY: I will rephrase.

8 BY MR. STUCKY:

9 Q. The basis for an aquifer maintenance credit, and  
10 the reason the City is asking for a credit, is  
11 because the City is leaving water in storage in  
12 the aquifer, is that a true statement?

13 A. That's part of the reason.

14 Q. What is the other reason?

15 A. There is no room in the aquifer to put the  
16 physical water that we diverted from the river  
17 and treated at the treatment plant. At that  
18 point we only had two choices. Can't go in the  
19 ground, so that only leaves one choice. So it  
20 goes to town where it meets demand. Absent the  
21 ASR, absent the operation of the ASR, that  
22 demand has to be met with water withdrawn from  
23 the aquifer.

24 Q. So let me just walk through a gallon of water as  
25 an aquifer maintenance credit is accumulated.

1           You testified to the benefits of an aquifer  
2           maintenance credit a moment ago. So if a gallon  
3           of water is sent directly to the City, and one  
4           aquifer maintenance credit is accumulated, do  
5           you follow me so far?

6           A. Yes.

7           Q. That water, that one gallon of water would be  
8           used by the City for its municipal water supply;  
9           is that correct?

10          A. Yes, it is.

11          Q. And is what the City is then saying is at a  
12          later time when the City is asking to withdraw  
13          its aquifer maintenance credit for that one  
14          gallon of water, that the City would be allowed  
15          to then take another gallon of water from the  
16          aquifer at a later time. Is that what the  
17          City's proposal purports to do?

18          A. Yes. The gallon we did not remove on the day we  
19          started with to meet the demand of the customer.

20          Q. So just under my scenario, so I am clear, this  
21          gallon of water that is sent to the City would  
22          be used to meet the City's municipal water  
23          supply?

24          A. Yes. In lieu of the gallon out of the aquifer.

25          Q. And then later, because a credit is generated

1 under the aquifer maintenance credit for that  
2 same gallon of water, the City would also be  
3 able to take an additional gallon of water out  
4 of the aquifer at a later time; is that correct?

5 A. No, we are taking the gallon of water we didn't  
6 take out at the beginning of your transaction,  
7 because we didn't have to take it out because we  
8 produced it with the ASR.

9 Q. So you are saying in the future no water would  
10 be taken out of the aquifer?

11 A. We would take the gallon we didn't take at the  
12 beginning of your analysis.

13 Q. So just in a strict sense, would you take  
14 another gallon of water out of aquifer later?

15 A. No. We would take the gallon we did not take  
16 out at the beginning of your analysis.

17 Q. So no water would come out of the aquifer at a  
18 later time under the aquifer maintenance  
19 credits?

20 A. Yes, the gallon would come out. It would be the  
21 gallon we did not take out at the beginning of  
22 your analysis.

23 Q. So, in other words, and I understand how you are  
24 characterizing it; but, in other words, for each  
25 gallon of water that's sent to the City, the

1 water, the City can then take an additional  
2 gallon of water out of the aquifer because it  
3 was left in storage; is that correct?

4 A. No. I disagree with your characterization as  
5 additional. It's the gallon we did not take at  
6 the time we had the original demand because we  
7 were able to meet demand with an alternative  
8 source.

9 Q. Okay. Let me just ask this quite simply. If  
10 one gallon of water is used, one gallon of water  
11 would be used in the City; is that right?

12 A. Okay.

13 Q. Sent directly to the City. Could the City  
14 withdraw, later under an aquifer maintenance  
15 credit, a gallon of water out of the aquifer?

16 A. We could withdraw that gallon of water. Not an  
17 additional gallon. The gallon that was to meet  
18 the demand for that gallon that we didn't have  
19 to pull out and send on that day because we put  
20 the ASR water in to the pipeline to town.

21 Q. So the City later could take a gallon of water  
22 out of the aquifer?

23 A. That gallon that we did not take at the  
24 beginning.

25 Q. So is the answer yes in that regard?

1 A. My answer is, it's the gallon that we did not  
2 take out at the beginning of your analysis.

3 Q. But the City could take that gallon out later;  
4 is that correct?

5 A. Yes.

6 Q. Okay.

7 A. Because we did not take it out at the beginning.

8 Q. In ASR Phases I and 2, and especially in ASR  
9 Phase I, are you familiar with any of the  
10 conditions as they related to passive recharge  
11 credits?

12 A. Only very vaguely, very broadly.

13 Q. So as you are sitting here today would you have  
14 any opinion or testimony with regard to passive  
15 recharge credits? Would you have any knowledge  
16 or expertise as far as what qualifies as a  
17 passive recharge credit?

18 A. No.

19 Q. Do you believe that with respect to an aquifer  
20 maintenance credit, and just follow me for a  
21 moment. The City pumps 40,000 acre feet to the  
22 city, directly from the Little Arkansas River  
23 during it's overflow, and then later and then  
24 has 40,000 aquifer maintenance credits built up.  
25 Do you follow my hypothetical so far?

1 A. Yes, sir.

2 Q. After the City uses those 40,000 acre feet of  
3 aquifer maintenance credits, is it your opinion  
4 that the City should replace that water later?

5 A. I am not sure what you mean by replace that  
6 water. Have we loaned it from somebody?

7 Q. Replace its physical recharge credits. Should  
8 the City replace it with physical recharge  
9 credits.

10 A. My intention is to generate every physical  
11 recharge credit that we can, every day that we  
12 can.

13 Q. My question is this, if the City is to take out  
14 40,000 acre feet in aquifer maintenance credits,  
15 as far as a hypothetical goes, do you think it  
16 would be a good planning initiative and a good  
17 condition for your proposal to require the City  
18 to then replace that water with physical  
19 recharge credits or physical recharge in the  
20 future?

21 A. I am not sure that that, I am not sure that that  
22 would be appropriate.

23 Q. Okay. And why not?

24 A. Well, I am not sure where the claim comes from  
25 to require that. What is the reasoning to



1           require it? That we, I mean, that assumes that  
2           AMCs are not a functional equivalent of recharge  
3           credits.

4       Q.    Let's back up a little bit on your testimony.  
5           Sorry, it's a little harder for me to flip  
6           through documents. I apologize.

7                        You testified just a moment ago that  
8           part of the reason for the City's planning and  
9           the benefits that you touted with respect to the  
10          aquifer maintenance credit is based on the fact  
11          that if the minimum index level is lowered, the  
12          City could wait longer before it would have to  
13          claim any of its recharge credits. Is that what  
14          your testimony said?

15       A.    Absolutely.

16       Q.    Now, let me ask you this, is that, would the  
17          City wait to claim those recharge credits  
18          because it's part of good planning by the City?  
19          Or would it be required by the City? Is it a  
20          requirement?

21       A.    We would wait because we only want to be using  
22          those credits, the ASR credits, in the severe  
23          prolonged drought. And until it's severe and  
24          prolonged, we wouldn't want to use them. We are  
25          saving them for those very rare occasions.

1 Q. And I want to clarify though, the benefits that  
2 are derived from that, assume that the City  
3 would voluntarily choose to be a good steward of  
4 the aquifer. Is that an accurate statement?

5 A. I am not sure I understand your question.

6 Q. Well, let me ask it this way. There is no  
7 requirements in place that would dictate when  
8 the City would have to draw down the aquifer and  
9 when it couldn't draw down the aquifer, other  
10 than that minimum index level. In other words,  
11 it would be the City's decision whether or not  
12 to pump down the aquifer, is that a true  
13 statement?

14 A. Yes.

15 Q. And, in fact, if it's the City's decision on  
16 whether to pump down the aquifer, is it true  
17 that part of the benefits that are derived from  
18 the City's model assume that the City would make  
19 decisions and execute planning that would be  
20 consistent with sound aquifer maintenance and  
21 planning? Do you follow my question?

22 A. I do not. Would you just repeat it, I think I  
23 could follow it the second time.

24 Q. Okay. Do part of the benefits of the City's  
25 proposal have a baseline assumption that the

1 City is going to implement planning that would  
2 be best for the aquifer in its planning?

3 A. That's why we are here today.

4 Q. So, in other words, if you are to testify and  
5 say there will be benefits because if the  
6 minimum index level is lowered, we'll not have  
7 to pump the aquifer as soon. Those statements  
8 are based on the assumption that the City would  
9 pump out of the aquifer and choose to be a good  
10 steward of the aquifer only under those  
11 circumstances, is that true?

12 A. We intend to always be a good steward of the  
13 aquifer.

14 Q. And so, but let me ask you this, there is no  
15 requirement of the City, other than the  
16 requirements that are in ASR Phase I and Phase  
17 II, that specifically require the City to be a  
18 good steward of the aquifer, is that a fair  
19 statement?

20 A. And those are requirements that no other water  
21 rights holder has. No other water rights holder  
22 has that are in those permit conditions. If I  
23 am following the question.

24 Q. I think a moment ago you said that you don't  
25 have any testimony as far as whether or not an

1 aquifer maintenance credit is a passive recharge  
2 credit, that you didn't have any knowledge or  
3 expertise in that area; is that correct?

4 A. Yes.

5 MR. STUCKY: I don't have any further  
6 questions.

7 THE HEARING OFFICER: Miss Wendling,  
8 did you have questions for the witness?

9 MS. WENDLING: Yes.

10

11

CROSS EXAMINATION

12

BY MS. WENDLING:

13

Q. Going back to your strategic plan, I think it's  
14 Exhibit 9.

15

AUDIENCE MEMBER: Can you move the  
16 microphone closer.

17

Q. The strategic plan in Exhibit 9 is in the purple  
18 binder.

19

AUDIENCE MEMBER: It's not on.

20

MS. WENDLING: Is that better?

21

AUDIENCE MEMBER: Yes.

22

BY MS. WENDLING:

23

Q. So on Page 30 power slide 36 on that  
24 presentation.

25

A. Okay. I am there.

1 Q. So you have the cost comparison of the different  
2 plans and you have a cost figure for ASR?

3 A. Yes.

4 Q. Are those the costs associated with the AMC  
5 proposal?

6 A. No. These were costs that were associated with  
7 the alternative strategy of an additional  
8 storage of the surface water flow prior to  
9 treatment, as well as additional treatment or  
10 injection points for ASR.

11 Q. Does this PowerPoint presentation address the  
12 concept of the AMCs?

13 A. No. I do not believe it does.

14 Q. And it was this presentation of the strategic  
15 plan that was voted on by City Council and  
16 approved?

17 A. Yes, that's my understanding, is that this was  
18 part of a follow up to the presentation that was  
19 made to them in 2014 regarding strategic  
20 planning work that they had done on a number of  
21 subjects, including water supply.

22 Q. So the strategic plan that was approved at that  
23 point in time did not include AMCs?

24 A. That's my understanding.

25 Q. And did that proposal include a change to a

1 minimum index level?

2 A. I do not believe it did.

3 Q. You have talked a bit about the current  
4 situation where you believe the aquifer is too  
5 full that it cannot be, you cannot accumulate  
6 recharge credits, is that a fair  
7 characterization?

8 A. Yes, it is.

9 Q. What are some of the things that cause the  
10 aquifer to be too full that would prevent your  
11 physical recharge?

12 A. When we switched to our integrated water supply  
13 plan, excuse me, when we switched our emphasis  
14 to using more water to meet customer demand from  
15 Cheney Reservoir, and taking less of our native  
16 water rights, the 40,000 acre feet per year that  
17 we have in the Equus Beds, that contributed.  
18 Natural recharge contributed. Artificial  
19 recharge contributed. And it's possible that  
20 the changes and practices of other water right  
21 holders in the area could have contributed. I  
22 do not have knowledge of that directly.

23 Q. Other than the fullness of the aquifer, are  
24 there other limitations on your ability to  
25 perform physical recharge?

1 A. If I interpret your question to mean if that, if  
2 the, if the aquifer were not full would there  
3 still be limitations on producing physical  
4 recharge? Yes. There would be physical  
5 limitations of the treatment plant. There would  
6 be physical limitations of the treated water  
7 transmission, there would be treated injection  
8 point limitations, there would be raw water  
9 delivery from the river to the treatment plant,  
10 and there would be the raw water availability in  
11 the Little Ark. They would all be physical  
12 limitations. Today none of those come in to  
13 play as the limiting factor.

14 Q. Other than the raw water availability in the  
15 Little Arkansas, are those other limiting  
16 factors within the City's ability to improve?

17 A. Yes. We could build bigger treatment plant and  
18 we could build larger pipelines and we would  
19 still have the same existing bottleneck of a  
20 full aquifer. And we would have better delivery  
21 to that choke point.

22 Q. I believe you said you became involved with  
23 Phase II of the ASR project; is that correct?

24 A. Yes.

25 Q. And that was implemented about three years ago?

1 A. That was my guess.

2 Q. And a rough estimate of around 6,000 recharged  
3 credits accumulating?

4 A. No. I believe it's about 6,400 --

5 Q. Okay. Close enough.

6 A. -- acre feet.

7 Q. So if it's been three years, was ASR Phase II  
8 designed to meet your needs within three years  
9 or did it have a longer time horizon?

10 A. No. The original idea of the short-term  
11 transfer from wet years to dry years it would be  
12 operating within that timeframe. Within this  
13 new mission that we have for this plant and this  
14 project, it's a very long horizon, it is  
15 decades.

16 Q. You mentioned pumping to create space within the  
17 aquifer.

18 A. Yes.

19 Q. Are there alternatives to pumping that would  
20 create space in the aquifer?

21 A. Not that I am aware of.

22 Q. Is it your belief that the current, the alleged  
23 full state we are presently in, will continue  
24 indefinitely?

25 A. First of all, I am not sure what to do with the



1           characterization of alleged full state. I tried  
2           to explain earlier in my testimony that the  
3           final couple of percent of predevelopment level  
4           is difficult to achieve. I will tell you that  
5           at GMD2 board meetings the Board has had  
6           discussions about problems that people have had  
7           with wet basements because of high groundwater  
8           levels. I don't know what the alternatives  
9           would be.

10        Q. I will come up with a different question.

11        A. Okay.

12        Q. In your experience with water management, do  
13           you, have you experienced the aquifer at varying  
14           levels throughout your tenure with the City?

15        A. Yes.

16        Q. So sometimes it's high and sometimes it's low?

17        A. Well --

18        Q. Lower.

19        A. Well, figure 13 shows the recovery from '93 to  
20           2016. In the area of our well field that's all  
21           positive to extremely positive in terms of a net  
22           increase. Yes, there are variations. There are  
23           variations over time and over space within the  
24           well field and time.

25        Q. So one could assume that over time, even without

1 the City's current pumping, the aquifer would  
2 drop to a point where you would then again be  
3 able to accumulate physical recharge credits?

4 A. Oh, that's our strategy today. Our strategy  
5 today is we are now reemphasizing and  
6 prioritizing taking water out of the aquifer to  
7 draw the aquifer level down to create the  
8 physical space to put physical recharge credits  
9 in. That's what our current permit condition  
10 allows us to do. That's what we working on now.  
11 We certainly plan on it going down.

12 Q. As an alternative to the City intentionally  
13 pumping the aquifer down, is it also possible  
14 you could wait and over time the aquifer level  
15 would go down without the City having to force  
16 it down?

17 A. No, that doesn't meet our needs for protection  
18 from drought.

19 Q. I am not asking about your needs for drought. I  
20 am talking about your experience monitoring  
21 levels in the aquifer. Even without the city's  
22 pumping, the levels in the aquifer might go  
23 down?

24 A. Not as fast as if we worked to get it there.

25 Q. I am not asking about the speed, it's a

1           yes-or-no question. Will it go down without the  
2           city's pumping?

3       A.    I don't know.

4       Q.    So you have mentioned your current strategy of  
5           pumping intentionally to create space. I  
6           believe you also mentioned that you do not know  
7           when a drought will occur; is that correct?

8       A.    Yes, ma'am.

9       Q.    And you associated some risks with having a  
10          lowered or partially depleted state when we  
11          enter the drought; is that correct?

12      A.    Yes, ma'am.

13      Q.    So do you perceive risks with your current  
14          strategy of pumping a hole in the aquifer at  
15          this point?

16      A.    Yes, ma'am.

17      Q.    Have you quantified that risk?

18      A.    No. We haven't quantified it.

19      Q.    You have expressed a desire to keep the aquifer  
20          full, and you are being a good water steward; is  
21          that correct?

22      A.    Yes, ma'am.

23      Q.    However, in the proposal is there a limitation  
24          as to when to pump the AMCs?

25      A.    In our proposal that we are here today?

1 Q. Yes.

2 A. Yes.

3 Q. There is a limit?

4 A. Yes.

5 Q. What is that?

6 A. There are new bottoms defined for all of the  
7 index cells.

8 Q. Other than the index level, is there any other  
9 limitation on when the City would be allowed to  
10 pump AMCs?

11 A. If I am following your question, the answer  
12 would be no.

13 Q. So if you were no longer in your position and  
14 someone else were making decisions on pumping,  
15 who did not choose to be a good water steward,  
16 they could, in fact, pump those AMCs outside of  
17 a drought?

18 A. It is physically possible for me, or anyone  
19 else, to pump AMCs outside of a drought. AMC  
20 produced water is by far, by orders of  
21 magnitude, the most expensive water we have in  
22 our portfolio. We have no motivation to spend  
23 that in anything except a critical condition to  
24 our customers.

25 Q. You have also commented that the City's efforts

1 in reducing groundwater use, and relying more  
2 heavily on Cheney, have resulted in significant  
3 recovery to the aquifer. Is that a correct  
4 characterization?

5 A. Yes, correct.

6 Q. Can you explain what you mean by recovery?

7 A. Figure 13 on Page 3-4 of the City of Wichita's  
8 proposal shows the recovery from 1993 to 2016.  
9 That's the recovery.

10 Q. So is it accurate to say recovery is a higher  
11 water level?

12 A. Yes.

13 Q. And the City's decision to not pump has resulted  
14 in a higher water level?

15 A. Yes.

16 Q. But that's not the city physically adding water,  
17 aside from the limited physical recharge  
18 credits?

19 A. Correct. Which is figure 12.

20 Q. Very good. You mentioned, and I will tell you  
21 the figure, in your proposal benefits to every  
22 water source in the area as the result of this  
23 proposal; is that correct? I was joking. We  
24 don't really need the figure, you talked about  
25 benefits to all the water credits; is that

1 correct?

2 A. Yes. But I don't remember if that was  
3 successfully objected to or not.

4 Q. At this point I don't either. When you talk  
5 about these benefits, those benefits are  
6 associated with accumulation of credits; is that  
7 correct?

8 A. Yes.

9 Q. In the event the City pumped 120,000 acre feet  
10 over an eight year drought, that would not  
11 actually benefit the aquifer at that point in  
12 time, would it?

13 A. I am not sure I follow your question.

14 Q. So the City --

15 A. If pumping water is not benefiting the aquifer  
16 then every water rights user that's ever existed  
17 has done a disservice to the aquifer.

18 Q. I am trying to question what happens when the  
19 City actually uses the AMC, the point where you  
20 need to pump the AMCs out of the aquifer.

21 A. What happens is customer demand is, in spite of  
22 a 1930s level dustbowl area drought.

23 Q. And I want to think about the aquifer. The City  
24 would have the ability to pump 120,000 acre feet  
25 of AMCs over an eight year drought, if that were

1 to happen, what is the benefit to the aquifer at  
2 that point in time? Is this a benefit to the  
3 aquifer?

4 A. It has done its job. It has supplied water to a  
5 water rights holder. That's what, I mean,  
6 Kansas water law says that's what we are  
7 supposed to do, make economic use of the waters  
8 of the State of Kansas.

9 Q. You have also proposed to lower the minimum  
10 index levels. If during a drought, or if at any  
11 time, the water levels are dropped an additional  
12 ten feet to the new proposed minimum index  
13 levels, what benefit does that have to the  
14 aquifer?

15 A. I am not following your question. What is the  
16 benefit to the aquifer of a lower aquifer level,  
17 is that your question?

18 Q. Of allowing users to lower the aquifer to a  
19 lower minimum index level.

20 A. Well, the waters have been put to economic use.

21 Q. Does the proposal, as it stands, as it's  
22 written, require the City to continue engaging  
23 in physical recharging?

24 A. Our proposal that we are here on today?

25 Q. Yes.

1 A. Yes, we are making a commitment that if we could  
2 do physical recharge, that's our first highest  
3 priority of what to do with water produced by  
4 the project.

5 Q. And you have expressed that the physical  
6 recharge is the most expensive water out there  
7 for you to produce?

8 A. Yes.

9 Q. Now, the City has committed to physical  
10 recharge, but does the proposal, the words of  
11 the proposal, actually contain a requirement  
12 that the City engage in physical recharge?

13 A. That's my understanding.

14 Q. Are you able to tell me where in the proposal it  
15 says that?

16 A. No, I am not.

17 Q. Okay.

18 A. But that's our intention.

19 Q. Are you aware of any detriments to lowering the  
20 water levels to the newly proposed minimum index  
21 level?

22 A. Lower aquifer levels will adversely impact the  
23 chloride contamination that we talked about  
24 earlier. So if water levels are lower, the  
25 tendency of those plumes, in both the natural



1 and manmade, are going to move more, in general.

2 The USGS report shows there are exceptions.

3 Q. I believe you agreed the City is not restricted  
4 to using the AMCs at any time, you agreed to  
5 that, I believe.

6 A. Yes, I have. And I hope I made it clear that it  
7 doesn't make any sense. It's the height of  
8 irresponsibility to use it at times when you  
9 have free water available. I mean the water  
10 from our 40,000 acre foot native right is free.  
11 Why would we use the very expensive ASR water  
12 when we, if we haven't already used all of our  
13 native right?

14 Q. As a utility, as a water utility, you provide  
15 water to a number of customers and other  
16 municipalities; is that correct?

17 A. Yes. We have a number of wholesale customers  
18 and a number of customers that are served at  
19 retail outside of the city limits.

20 Q. And it's possible that you could take on a new  
21 customer in the future?

22 A. Well, yes.

23 Q. And it's possible that with that added customer  
24 you would exceed the demand of just the 40,000  
25 acre feet?

1 A. In order to draw that conclusion we would have  
2 to assume characteristics of this hypothetical  
3 new customers. I could tell you that because  
4 today, outside of the city limits, we are  
5 already serving 70,000 citizens of Kansas. If  
6 the customers that we serve outside of the city  
7 limits of Wichita, it would be a city that would  
8 be the seventh largest city in Kansas. We've  
9 already got that footprint. That's already  
10 built in to our planning. There is nobody  
11 outside of that footprint, of any significance,  
12 in terms of water consumption. You literally  
13 get to other municipalities. We are not going  
14 to be serving wholesale water to Hutchinson or  
15 serving wholesale water to Tulsa.

16 Q. You have a bottle of water sitting on the desk  
17 in front of you?

18 A. Yes.

19 Q. And bottled water is very popular these days.

20 A. Yes, it is. I brought my container with my tap  
21 water in it, but this was provided and I didn't  
22 want to be rude.

23 Q. It's possible that a new company could be your  
24 customer and they want to sell bottled water and  
25 that could be the increased demand, it doesn't

1 have to be municipalities; is that correct?

2 A. That's true. We have a very large bottled water  
3 customer that's our customer this afternoon.

4 Q. Love to here that's where my water is going.  
5 You could take on another customer which could  
6 increase the demand for water; is that correct?

7 A. Yes.

8 Q. And the AMCs could be used to meet that demand?

9 A. I understand that you are connecting those dots.  
10 I mean, the customer that we have got today is  
11 decimal dust on our utility. If we got ten of  
12 those it would not be a significant increase in  
13 our water demand. If we were running away from  
14 this proposal because of a fear that a lot of  
15 bottled water is going to cause the aquifer to  
16 go dry, no, I don't agree with that assertion.

17 Q. If we could turn back to the proposal, I believe  
18 it's Attachment A to your proposal. It is your  
19 drought response plan.

20 A. (Witness reviews documents).

21 Q. I believe you stated earlier that one of the  
22 goals is to avoid going in to stages 3 or 4 in  
23 the model 1% drought, is that my understanding?

24 A. Yes.

25 Q. Could you go to Page 6, the plan which talks

1 about the actions in stage 3.

2 A. Yes.

3 Q. In the second bullet point on the right-hand  
4 column under the City of Wichita internal  
5 conservation, can you tell me what that is.

6 A. Reduce hours at city owned fountains.

7 Q. So if your goal is achieved we'll survive a 1%  
8 eight year drought with the City still running  
9 all their fountains?

10 A. I can't speak to the details of this. I am not  
11 recalling the details behind that bullet point.

12 Q. All right. On the left-hand column under  
13 utility customers, can you tell me what the  
14 third bullet point on the left says.

15 A. It says exceptions are provided for businesses  
16 generating economic activity directly from  
17 outdoor irrigation.

18 Q. Are you familiar with what types of customers  
19 that would be describing?

20 A. Yes. A golf courses, athletic fields, water  
21 parks.

22 Q. So during this modeled 1% drought we'll still  
23 have green golf courses; is that correct?

24 A. No. If we reach stage 3. Yes, in stage 3 they  
25 would still be exempted.

1 Q. And your goal is reaching stage 3?

2 A. Yes, it is.

3 Q. And the water parks will all still be up and  
4 running?

5 A. Yes.

6 Q. So if we flip back to Page 4 where we are at  
7 stage 2 of the drought response plan, under  
8 utility customers, the third bullet point on the  
9 left. Can you read that one?

10 A. Outdoor water usage prohibited from 10:00 a.m.  
11 until 8:00 p.m. on all days. It is not allowed  
12 at all on Saturdays, Sundays or Mondays.

13 Q. So utility customers would still be able to  
14 water their lawn weekly, even if we are at stage  
15 2?

16 A. Yes. Correct.

17 Q. And if we go back to the proposal itself, I  
18 believe it's table 2-5. Page 2-10.

19 A. I am there.

20 Q. I think you did the rough math earlier for the  
21 row of city pumping to be approximately 50,000.

22 A. Yes.

23 Q. And do you have any reason to anticipate your  
24 needs during the model drought would exceed that  
25 estimated 50,000?

1 A. No. This is, this is our best planning  
2 estimate.

3 Q. And the AMC's purpose is to provide water during  
4 a drought; is that correct?

5 A. Yes.

6 Q. You have no reason to assume that you would ever  
7 need the full 120,000 acre feet cap?

8 A. We might need it before we could reestablish  
9 enough for another drought. I mean, remember 1%  
10 probability drought does not mean it going to be  
11 hundred years until the next one. We all know  
12 that. So the 120,000 is a cap that provides for  
13 two of these severe droughts to be able to be  
14 banked in our credits.

15 Q. Okay.

16 A. And that compares to no cap this afternoon.

17 Q. In addition to being expensive, would you  
18 characterize the physical recharge credits as  
19 being somewhat difficult to obtain?

20 A. I think you could use the words expensive and  
21 difficult rather interchangeably, yes.

22 Q. And do you believe that AMCs will be easier to  
23 accumulate?

24 A. No. They are going to have the same cost to us  
25 either way. There is no price differential. It

1 is literally coming out of the river, going to  
2 the treatment plant, going through the treatment  
3 plant, coming out of the treatment plant, and  
4 either going into either physical injection or  
5 going to town. Our costs are the same.

6 Q. So when you spoke earlier about the difficulties  
7 of getting the last half gallon of gas in to  
8 your automobile and translated that in to the  
9 aquifer, with the AMC concept, that difficulty  
10 would no longer be present; is that correct?

11 A. The AMC concept allows us to reflect the fact  
12 that eventually you stop clicking on the pump,  
13 okay? Our first choice is still to create  
14 physical recharge water, always has been, always  
15 will be. But because of the nature of the  
16 aquifer, and the mounting around the recharge  
17 points, we are physically limited in our ability  
18 to get that water spread out over the very top  
19 of that aquifer without exceeding our ten foot  
20 restriction. In other words, we can't pump the  
21 water in as fast as the aquifer can accept it to  
22 spread it out in that last couple of percent of  
23 space that's available. So we have to actually  
24 over excavate the water with a cone of  
25 depression by drawing the water out to be able

1 to put that mounted water back in without  
2 breaking through that ten foot restriction,  
3 especially when we are getting down to that last  
4 2%. It's a finesse thing.

5 Q. And using the AMCs you no longer need that  
6 finesse?

7 A. Well, the finesse, it's not a matter of finesse.  
8 If we could finesse our way in, we will. We  
9 have finessed our way to the last couple of  
10 percent. At that point you just can't finesse  
11 any more. The aquifer is practically full. And  
12 we don't mean that as an approximate. We mean  
13 that there is not a practical way to get water  
14 back in.

15 Q. To your knowledge has the City looked at the  
16 amount of time it will take the aquifer to  
17 recover from the simulated drought?

18 A. I believe we have evaluated that. I have not  
19 participated in that. I don't have direct  
20 knowledge of it.

21 Q. Do you know who would have direct knowledge of  
22 it?

23 A. No. Not off the top of my head, I don't.

24 MS. WENDLING: I have no further  
25 questions.



1 THE HEARING OFFICER: Mr. McLeod, what  
2 do you think?

3 MR. McLEOD: I have some redirect. It  
4 is my understanding we committed to the church  
5 we would not stay after 5:00 o'clock and we are  
6 not in keeping with that at this moment.

7 THE HEARING OFFICER: That's true. So  
8 we better recesses until tomorrow morning.

9 MR. McLEOD: That would be my proposal  
10 to pick up with redirect tomorrow morning.

11 THE HEARING OFFICER: Okay. We'll see  
12 everybody tomorrow morning at 9:00 a.m.

13

14 (Proceedings concluded at 5:07 p.m.)

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**In The Matter Of:**

*State of Kansas - Division of Water Resources  
Kansas Department of Agriculture*

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*City of Wichita's Phase II  
Vol. II  
December 11, 2019*

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STATE OF KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the )  
City of Wichita's Phase II )  
Aquifer Storage and ) Case Number  
Recovery Project in Harvey ) 18 WATER 14014  
And Sedgwick Counties, )  
Kansas. )

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Pursuant to K.S.A. 81a-1901  
and K.A.R. 5-14-3a.

FORMAL HEARING

Volume II

This matter came on for Formal Hearing  
before the Honorable Presiding Officer Constance  
C. Owen for the Division of Water Resources of  
the State of Kansas, at Halstead, Kansas, before  
Rachelle Smith, a Certified Shorthand Reporter  
of Kansas, December 11, 2019, at 9:00 a.m.

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A P P E A R A N C E S

The City of Wichita Department of Public Works & Utilities appeared by its attorney, Mr. Brian K. McLeod, Attorney at Law, 455 North Main Street, Wichita, Kansas, 67202.

The Division of Water Resources Kansas Department of Agriculture appeared by its attorney, Mr. Aaron Oleen, Attorney at Law, 1320 Research Park Drive, Manhattan, Kansas 66502.

The Equus Beds Groundwater Management District Number 2 appeared by its attorneys, Mr. David J. Stucky and Mr. Thomas A. Adrian, Attorneys at Law, 313 Spruce, Halstead, Kansas 67056.

The Intervenors appeared by their attorney, Ms. Tessa M. Wendling, Attorney at Law, 1010 Chestnut Street, Halstead, Kansas 67056.

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**State of Kansas - Division of Water Resources Kansas Department of**  
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20	DWR EXHIBIT 1	
21	MARKED FOR IDENTIFICATION	315
22	OFFERED	315
23	ADMITTED	316
24	GMD EXHIBIT 8	
25	MARKED FOR IDENTIFICATION	323

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1	OFFERED	324
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3	GMD EXHIBIT 6	
4	MARKED FOR IDENTIFICATION	353
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18	GMD EXHIBITS 64, 65 AND 66	
19	MARKED FOR IDENTIFICATION	387
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21	CITY EXHIBIT 15	
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2	ADMITTED	513
3	CITY EXHIBIT 17	
4	MARKED FOR IDENTIFICATION	517
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1 P R O C E E D I N G S

2  
3 THE HEARING OFFICER: Good morning. We  
4 are now back on the record. It is December 11,  
5 2019. And it's 9:00 o'clock in the morning and  
6 this is day two of the formal phase of the  
7 public hearing for the City of Wichita's  
8 modification proposal regarding their Aquifer  
9 Storage and Recovery Project, Phase II. Before  
10 we get started with questioning, just a  
11 logistical thing that I need to put on the  
12 record regarding the marking of exhibits. The  
13 parties have agreed to have their exhibits  
14 marked with the party indication, as well as the  
15 number of their exhibits, so that each parties'  
16 exhibits will begin with Number 1.

17 So the City's exhibits from yesterday,  
18 numbered 1 through 12, and the court reporter  
19 has remarked them as City 1 one through City 12.  
20 And that's the way we will proceed from this  
21 point forward regarding the marking of exhibits.

22 Is there anything else that the parties  
23 would like to raise before we start? Okay.  
24 Hearing none, Mr. McLeod, we return to you.

25 MR. McLEOD: Okay. I think Mr. Pajor

1 should resume the seat of honor at the witness  
2 table being already under oath.

3 THE REPORTER: Is the mic on?

4 MR. McLEOD: Yes.

5

6 CONTINUATION OF REDIRECT EXAMINATION

7 BY MR. MCLEOD:

8 Q. Mr. Pajor, yesterday there continued to be  
9 questions several times in your direct about  
10 whether the City would use its 40,000 acre feet  
11 base rights before taking credits. That's  
12 actually a proposed permit condition, isn't it,  
13 in the proposal?

14 A. Yes, it is.

15 Q. And is it also a feature of our current ASR  
16 operations plant?

17 A. Yes, that's correct.

18 Q. It was mentioned by Mr. Stucky and you conferred  
19 with him that in the prior instances where you  
20 looked at permits and permit modification  
21 requests as a member of the GMD board, those  
22 analyses were done by the district staff. In  
23 each of those cases who had to make the ultimate  
24 decision on recommendations based on those  
25 analyses?

1 A. The Board of Directors of the district was  
2 responsible for the ultimate decision.

3 Q. And so as a board member you still had to read  
4 and understand those analyses and make a  
5 decision based on that?

6 A. That's correct.

7 Q. And that was part of the experience that you  
8 bring with you to the witness stand today?

9 A. Yes.

10 Q. On the issue of seepage and the imputation of  
11 seepage to AMCs, and indeed the physical  
12 recharge credits, you had given Mr. Stucky a  
13 general answer that you thought those seepage  
14 numbers came from the annual accounting reports.  
15 And my question for you today, to may be a bit  
16 more specific, when the chief engineer and  
17 Groundwater Management District review those  
18 accounting reports and the chief engineer issues  
19 ultimately an order saying what credits the City  
20 will get based on that annual accounting report,  
21 does the chief engineers order have appended to  
22 it a table that includes a column showing what  
23 net loss to the river is being recognized in the  
24 computation of those credits?

25 A. Yes, that occurs on an annual basis.

1 Q. So there is actually like a short government  
2 document in the order of the chief engineer in  
3 which those numbers on seepage can be drawn?

4 A. That's correct.

5 Q. Counsel asked you a question about whether you  
6 could say the 120,000 acre foot cap was a viable  
7 cap. I don't know that there was any definition  
8 given there as to what a viable cap was. Does  
9 the City have any cap currently on the  
10 accumulation of a credits?

11 A. No. Our current permit does not have any  
12 restrictions on a cap for credits.

13 Q. So what we know about the 120,000 acre foot cap  
14 is, is that it's more of a cap than it is  
15 currently; is that correct?

16 A. Yes, it would be new.

17 Q. On the discussion of demand projections, there  
18 was reference by counsel to a prior testimony by  
19 David Warren where Mr. Warren discussed updates  
20 of demand projections that have proven in the  
21 course of time not to match objective facts as  
22 they unfolded. Do you remember how long ago  
23 that testimony from Mr. Warren would have been?

24 A. No, I don't recall. A number of years ago  
25 certainly.

1 Q. In the course of making demand projections, I  
2 think you concurred with Mr. Stucky there is an  
3 element of speculativeness there, these are  
4 forward looking projections, correct, where you  
5 are looking out to the year 2060 to figure out  
6 what system demand might be?

7 A. That is correct.

8 Q. We have to recognize that inherently they may  
9 not turn out as projected; is that correct?

10 A. Correct.

11 Q. Does it follow from Mr. Warren having made an  
12 update to the projections because facts were  
13 unfolding differently than projected that the  
14 projections the City makes will always be wrong?

15 A. They will always have to be revised because the  
16 actual numbers will most likely be different  
17 than the forecasted.

18 Q. From a management perspective, is that something  
19 that regularly happens in using planning  
20 projections that you have to update them as you  
21 go through time?

22 A. Yes. Absolutely. And I think in the discussion  
23 that was had in the state process of developing  
24 the 50 year revision it was pointed out several  
25 times that municipal cities generally, Wichita

1 included, while we do 50 year projections we  
2 redo those projections every few years in order  
3 to refresh them based on actual information that  
4 we have acquired.

5 Q. And as much as a projection has to be changed,  
6 if it was just a bad projection, might a  
7 projection have to be changed if customer  
8 behavior changed or technology changed or rate  
9 structure changed in a way that caused customer  
10 to be different than what was projected?

11 A. Yes.

12 Q. There could be, in fact, information with a  
13 bearing on impact on demand that wasn't knowable  
14 or foreseeable at the time that the projections  
15 were first made; is that correct?

16 A. Yes. And we are also looking at the assumptions  
17 that we made previously and adjusting the  
18 magnitude of those assumptions to reflect actual  
19 experience.

20 Q. Is there a speculative element in all management  
21 planning?

22 A. Yes. Absolutely. And that's why it is  
23 important as we do that work when we are making  
24 those forecasts we are conservative in our  
25 assumptions. And for a water supply that means

1           ensuring that if our numbers are not going to be  
2           spot on that we have coverage with additional  
3           water; as opposed to, for example, sales  
4           revenues if we are not going to be spot on with  
5           revenues we want to be conservative and assume  
6           somewhat less revenues will be received.

7       Q.    Are sales revenues then another thing that the  
8           utility regularly projects?

9       A.    Yes.

10      Q.    And you have annual budget projection  
11           requirements that are imposed by the state; is  
12           that correct?

13      A.    That's right.

14      Q.    And you know all of those things are likely to  
15           come out different than the projections; is that  
16           correct, just because of the degree, number of  
17           years you are looking forward?

18      A.    Yes.  And I think anyone that's done a personal  
19           or business budget understands that the actuals  
20           after the fact is going to be different than the  
21           budget forecast.

22      Q.    So does it follow from the fact that they are  
23           likely to be different than projected that you  
24           just shouldn't do projections and plannings  
25           because they may not match what the facts turn



1 out to be?

2 A. Obviously we can't do that because we wouldn't  
3 have a basis for operating utility and making  
4 plans.

5 Q. So you are stuck with a degree of planning, even  
6 though it's imprecise, because you really can't  
7 run the utility without it?

8 A. Correct.

9 Q. As between city staff, who are running the  
10 utility, and staff of the Groundwater Management  
11 District, who are not, who is in the best  
12 position to make a guesstimate about projections  
13 for future years?

14 A. I would submit that the City of Wichita would  
15 be.

16 Q. If those projections turn out to be disastrously  
17 off, with operational consequences for the  
18 utility, who is going to get fired? Somebody  
19 from your staff or somebody on the Groundwater  
20 Management District staff?

21 A. Again, it would be the City staff who would be  
22 responsible to the elected officials and the  
23 city manager.

24 Q. There was some questions yesterday about  
25 alternatives the City might have pursued for

1 supplies from the City of El Dorado. In all  
2 such discussions, is there a party in the  
3 discussions other than the City?

4 A. Yes. The City of El Dorado.

5 Q. And so in terms of what can and can't be done,  
6 the City of Wichita has no unilateral say over  
7 terms of an arrangement; is that correct?

8 A. That's correct. We would have to have  
9 negotiated a mutual agreement.

10 Q. And there would be a need in the course of that  
11 to come to terms with whatever the City of  
12 El Dorado thought was in its best interest; is  
13 that correct?

14 A. Certainly.

15 Q. And I think it was mentioned as to all the  
16 El Dorado scenarios yesterday in your direct,  
17 that one of the issues was whether the City of  
18 El Dorado could, in fact, promise the City of  
19 Wichita firm supply in the event of a drought?

20 A. Yes. Because the City of El Dorado, to the best  
21 of our knowledge, had never pursued their water  
22 supply plan assuming a 1% probability drought.  
23 And, therefore, we had to do that work in order  
24 to determine whether or not we would be  
25 comfortable that water would be there. And our

1 analysis showed it would not be available, most  
2 likely.

3 Q. And did we try to get any assurances from the  
4 City of El Dorado about the availability of that  
5 water?

6 A. We did. And we were unsuccessful at securing  
7 that.

8 Q. In terms of the City operating fountains and  
9 such things during stages of drought  
10 restrictions, Mr. Pajor, is the City's drought  
11 response plan a plan, the details of which are  
12 posed on the City by some authority?

13 A. No. The City's drought response plan was  
14 entirely voluntarily developed by city staff and  
15 adopted by the City Council.

16 Q. And to your knowledge, do any of the other users  
17 in the Equus Bed well fields have a similar  
18 drought arrangement that they follow?

19 A. Not to my knowledge.

20 Q. You were asked a question yesterday I believe by  
21 Mr. Stucky about multiyear flex plans, and you  
22 had a distant recollection of a discussion that  
23 you weren't sure when it had occurred. If you  
24 would look in lime binder behind the tab  
25 responses and find the City of Wichita responses

1 to Intervenors' interrogatories to the City of  
2 Wichita, Kansas.

3 (City Exhibit City 13 was marked for  
4 identification by the Reporter.)

5 BY MR. McLEOD:

6 Q. Flipping back through that set of  
7 interrogatories and answers, Mr. Pajor, do you  
8 see where the City was asked by the Intervenors  
9 to talk about whether, and to what extent, it  
10 had modeled to the proposal, some kind of  
11 alternative for multiyear flex plans.

12 A. (Witness reviews documents).

13 Q. And if you were to start on Page 9 of those  
14 responses, that might assist you in getting  
15 there.

16 A. (Witness reviews documents). When I look in the  
17 City of Wichita's responses to Equus Beds  
18 groundwater first request for admissions?

19 Q. No. You are looking for City Responses to  
20 Intervenor's interrogatories. It may be a  
21 little further back.

22 A. (Witness reviews documents). It's actually  
23 towards the end of that tab section, the  
24 Intervenor's answers are the later material in  
25 that section. (Witness reviews documents.) City

1 of Wichita responses to Intervenor's production  
2 request?

3 Q. You are probably getting near.

4 MR. McLEOD: May I approach the  
5 witness, Madame Hearing Officer?

6 THE HEARING OFFICER: Yes.

7 Q. I think that's it (indicating).

8 A. I am there. Thank you.

9 Q. Okay, Mr. Pajor, and do you see looking on Page  
10 9 at the Intervenor's interrogatory number 19  
11 that the City, that they had propounded a  
12 question, if the City contends that a multiyear  
13 flex account would not meet the City simulated  
14 water needs assigned to the Equus Bed well field  
15 in ASR in table 2-3 of the proposal, please set  
16 forth any facts and identify any related  
17 documents which you rely upon to support such a  
18 contention.

19 And then after objecting in a lawyerly  
20 way, we went on to provide an answer and in the  
21 course of that answer you had to participate in  
22 a discussion about multiyear flex accounts at  
23 that time, didn't you?

24 A. Yes.

25 Q. And looking at that answer it begins at the

1 bottom of Page 9 and continues over on to the  
2 following Page 10, does that refresh your  
3 recollection about the substance of that  
4 discussion?

5 A. Yes, it does.

6 Q. And the reasons why multiyear flex accounts were  
7 not good solutions for the City's water needs?

8 A. Yes.

9 Q. And what were those problems, or at least the  
10 ones that were identified at that time in that  
11 discussion with trying to use a multiyear flex  
12 account for those purposes?

13 A. We relied upon and provide in our response that  
14 we consulted with the DWR staff, and the  
15 Division of Water Resources, had not proposed  
16 multiyear flex accounts as an alternative for  
17 us. And they had advised that they would not  
18 consider such an account as being viable.

19 In addition, we found that the multiyear  
20 flex account would likely not be helpful in our  
21 modeling of a drought, or working our way  
22 through a model drought, because multiyear flex  
23 accounts require term permits be issued to  
24 replace the base water rights during suspension.  
25 Therefore, all pumping, including the quantity

1 under the 40,000 acre feet, what we referred to  
2 yesterday as our native rights, would be junior  
3 to most surrounding water rights. Duration of  
4 the multiyear flex account is five years and the  
5 1% drought, as we modeled it, exceeds the five  
6 year time, it runs approximately eight years in  
7 duration.

8 The water quality and the water use  
9 flexibility would be excessively restricted,  
10 current statute prescribes a maximum allotment  
11 of five times the average water use from 2000 to  
12 2009. During the period 2000 to 2009 the City's  
13 average water use was much less than our  
14 permitted 40,000 acre feet. Thus, the multiyear  
15 flex account would greatly reduce the water  
16 supply available below the existing water rights  
17 that provide for 40,000 acre feet per year, our  
18 native rights, as we have referred to it.

19 In addition, statute allows for the  
20 examination of different calendar years where,  
21 quote, water conservation reduced water use  
22 under the base water right. End quote. But  
23 even if that quandary was granted consideration  
24 under the water conservation provision the 5x of  
25 the City's base water rights of \$40,000, with

1 the exemption of drought year one, every year we  
2 need more water than the 40,000 in order to meet  
3 customer demand during the 1% drought.

4 For those reasons it was deemed it was  
5 not feasible to use multiyear flex accounts.

6 Q. Although the City, in fact, not modeled that in  
7 its original proposal, and not addressed it in  
8 its original proposal, your recollection that  
9 you had yesterday, that you looked at that,  
10 there were problems with it, this flushes out  
11 the detail of that?

12 A. Yes.

13 MR. McLEOD: I will offer the  
14 interrogatory responses of City's 13 for  
15 admission.

16 THE HEARING OFFICER: Any objection?

17 MR. STUCKY: No objection.

18 THE HEARING OFFICER: City's Exhibit  
19 Number 13 will be admitted.

20 BY MR. McLEOD:

21 Q. Mr. Pajor, the references, let me actually just  
22 back up here and have you do a simple overview  
23 of current ASRs and what the City is asking to  
24 change in the permit modifications. Currently,  
25 and as originally designed, how does the ASR



1 system work? What was it supposed to do?

2 A. The original approach for ASR was that during  
3 periods of sufficient flow, permit sufficient  
4 flow, in the Little Arkansas River we would  
5 divert part of that high flow event, we would  
6 treat that water to drinking water standards in  
7 our dedicated water treatment plant for the  
8 project and we would inject that water through a  
9 combination of injection wells and injection  
10 basins in to the aquifer to be able to generate  
11 credits that could be used in future years, in  
12 addition to our native water right. That was  
13 the original concept.

14 So water that was available in wetter  
15 years would be able to move to provide a source  
16 of supply for water in dryer years.

17 Q. Okay. And was there an index level set for the  
18 basin storage area below which the City would  
19 not be allowed to withdraw credits?

20 A. Yes, there was, and it was basically the levels  
21 of the aquifer in 1993.

22 Q. And when those conditions were first set, that  
23 would have been in conjunction with the ASR  
24 Phase I project; is that correct?

25 A. Yes.

1 Q. And what was the water source for ASR Phase I?

2 A. The water source for ASR Phase I is water from  
3 the Little Arkansas River above a permanent  
4 level of flow.

5 Q. And what was one of the main purposes of  
6 injecting that water in to the aquifer in Phase  
7 I?

8 A. Phase I and Phase II are fundamentally different  
9 in that Phase I is dedicated specifically to  
10 improving the hydraulic barrier of the Burrton  
11 chloride plume as it migrates towards the City's  
12 well field and other users' well.

13 Q. And when the 1993 levels were made, the lower  
14 limit, I think you had indicated that was just  
15 drawn from the low measurements of record.

16 A. Yes.

17 Q. Was there a connection between that and that  
18 purpose of keeping a hydraulic barrier in front  
19 of the Burrton chloride plume?

20 A. Well, I think the concept was as that was  
21 depleted in the aquifer and vicinity; and,  
22 therefore, it made sense everyone would  
23 understand the project was supposed to keep  
24 water above that level. And in Phase I that  
25 continues to be our objective.

1 Q. So basically if we weren't keeping water above  
2 that level, we weren't establishing or  
3 maintaining a hydraulic barrier?

4 A. We were not providing benefit from the project  
5 in terms of the Burrton chloride.

6 Q. How did ASR Phase II differ?

7 A. ASR Phase II has the same water source, the  
8 Little Arkansas River higher flows. It differs  
9 in that the intention was that that water would,  
10 indeed, be recovered originally on a regular  
11 basis, today on a very sparse basis to address  
12 drought response.

13 Q. And what are the permit modifications asking to  
14 change in the operation of the current ASR?

15 A. We are seeking these permit changes because two  
16 fundamental things changed over the course of  
17 the ASR project. The first is, the aquifer was  
18 recharged from its 1993 levels to nearly, or  
19 very nearly, functional full to predevelopment  
20 conditions. That's a major change in condition.

21 The second major change in condition  
22 that we have been talking about is our forecast  
23 of future customer demands for water. And as  
24 those have changed over the course of time, when  
25 we made those changes, we now see that the only,

1 quote-unquote, new water we need, the only water  
2 we need in addition to our annual native rights  
3 from Cheney reservoir and the Equus Beds well  
4 field, is water during severe drought. So ASR's  
5 mission today is to become that water supply for  
6 those rare, but severe, protracted drought  
7 conditions to meet a portion of the customer  
8 demands that our native rights in our water  
9 sources do not meet.

10 Q. And to help facilitate that, what are the two  
11 main areas of change that the proposed  
12 modifications would make?

13 A. In order to transition ASR from its original  
14 vision to the 1% drought response, we need to do  
15 that in a way that makes maximum use of the  
16 recovery of the aquifer that we have had. And  
17 also allows us to accumulate these credits over  
18 decades for these rare periods where we will  
19 need to use them.

20 Therefore, we have requested a way to  
21 generate credits from treating water in the  
22 Little Arkansas River, even though the aquifer  
23 is full, to be able to leave the aquifer full by  
24 taking those credits and using them to displace  
25 water that otherwise would have come from the

1 aquifer on that day to meet customer demand of  
2 our utility. We'll leave the aquifer full,  
3 we'll generate the water with our plant, we'll  
4 meet customer demand with it.

5 The second request we are making is  
6 that we be able to hold these precious expensive  
7 credits that we are generating over the course  
8 of an extended timeframe, so that we only use  
9 them if we are, indeed, in a long term  
10 protracted drought. We don't need them in a two  
11 year drought. But if we have to use them before  
12 they became stranded, because of the current  
13 bottom of the area in which we can store  
14 credits, that's what we are forced to do. And  
15 we don't want to use them prematurely, we want  
16 to hold them.

17 Q. And, Mr. Pajor, with respect to the term and  
18 phraseology functional equivalent which has been  
19 used in the proposal, and also bandied about in  
20 answers yesterday, when you say that the aquifer  
21 maintenance credit is a functional equivalent of  
22 the existing credit, are you trying to give some  
23 kind of legal opinion there?

24 A. No.

25 Q. Explain what you are getting at when you say

1           that the credits would be a functional  
2           equivalent.

3       A.    I am describing it operationally.  I am  
4           describing the water that comes out of the  
5           Little Arkansas River, gets treated through our  
6           treatment plant.  At that point it comes out of  
7           the treatment plant.  Our first choice of what  
8           to do with that water is to put it in to one of  
9           the recharge points and put it physically in to  
10          the aquifer.  Only at times in which that isn't  
11          physically possible to do, and instead we take  
12          that water directly to the meet customer demand  
13          and leave water, if we didn't have this plant,  
14          leave water that we would be pulling out of the  
15          aquifer so that we can use it at a future time,  
16          rather than using it at the time when ASR is  
17          running.

18       Q.   So under the current ASR operation to generate a  
19           credit you would have to deplete the aquifer and  
20           then refill it to a degree of, using counsel's  
21           example of yesterday, if you wanted to get  
22           credit, physical recharge credit, for a gallon  
23           of water you would have to go deplete the  
24           aquifer by a gallon of water, and then draw from  
25           the river, treat and inject a gallon of water.

1 And then in addition to refine the hypothetical  
2 from yesterday, there is a leakage factor there  
3 as well, that has to be accounted for?

4 A. Yes. All of that is true. And as I said in my  
5 testimony yesterday, it isn't remove a gallon to  
6 inject a gallon, we have to remove more than a  
7 gallon to make enough space to put that gallon  
8 in because of the nature of the recharge  
9 process.

10 Q. So we actually lose a little ground there?

11 A. We lose net ground in terms of water levels and  
12 physical water and storage in the aquifer.

13 Q. So the difference with the AMC is, instead of  
14 having to empty the aquifer and then put a  
15 little water back in to get the credit, you just  
16 leave the water?

17 A. That's correct.

18 Q. And to demonstrate, I don't have a gallon but I  
19 have this little bottle that's here on counsel  
20 table. As you are sitting here in the room do  
21 you know if this has just been sitting there all  
22 morning untouched by me or if I drank this and  
23 emptied the bottle about five to nine and  
24 refilled it from a water source?

25 A. No, I wouldn't know.

1 Q. Because the bottle of water is full either way,  
2 right?

3 A. Yes.

4 Q. And when you say that the credits are functional  
5 equivalents, is it just that factual scenario  
6 that they do the same thing that you are  
7 getting?

8 A. Yes.

9 Q. There was a criticism, a question actually,  
10 directed I think as a criticism yesterday, that  
11 the proposal, as written does not, cannot  
12 withdraw of credits to give anyone else  
13 direction over the City's withdrawal. So it  
14 would only be the City's decision when to draw  
15 those credits. Do you recall that line of  
16 questioning?

17 A. Yes, I do.

18 Q. Isn't that true now, Mr. Pajor, with respect to  
19 the physical recharge credits that the City has?

20 A. Yes, it is true.

21 Q. And isn't it also true with respect to the  
22 40,000 acre feet based rights that the City has  
23 in the well field?

24 A. That's correct.

25 Q. And yet even though it's the City's decision,



1           totally discretionarily on subject, of course,  
2           to permit conditions, when to draw under those  
3           rights, the aquifer is full today, isn't it, Mr.  
4           Pajor?

5           A.    Yes, very nearly.

6           Q.    Can you think of any reason why the City that  
7           has left the aquifer full, despite having  
8           decisional control on where to draw credits and  
9           its space rights, would suddenly choose to just  
10          simply draw down the aquifer for no reason  
11          connected to need?

12          A.    No, that wouldn't be in our physical interest,  
13          it wouldn't be in our economic interest, it  
14          wouldn't be appropriate.

15          Q.    You were asked yesterday whether factors, other  
16          than city pumping from the aquifer, and I think  
17          you indicated in your direct response that you  
18          weren't really aware of factors other than  
19          pumping. To refine that, pumping by other  
20          parties certainly could deplete the aquifer,  
21          even if the City was not pumping, wouldn't it?

22          A.    Yes.

23          Q.    And it would still be pumping, it would still  
24          consistent with your answer, it just wouldn't be  
25          the city's pumping; is that correct?

1 A. Correct.

2 Q. Is there a reason that the city would want to  
3 get in to that relationship, where if the party  
4 is putting water in to the aquifer, and then  
5 waiting for everybody else to draw it, in order  
6 to deplete it for physical recharge?

7 A. That would not be in our economic interest at  
8 all.

9 Q. And I think you had also indicated that timing  
10 wise there would be a problem in that the City  
11 taking that posture, it would take a long time  
12 for the levels to be pulled down enough for  
13 recharge?

14 A. Yes. It certainly would.

15 Q. And you were asked about limits on when the City  
16 could pump aquifer maintenance credits, and as  
17 such, and I think you indicated there are no  
18 temporal limits in the permit that say when the  
19 City can draw those credits; is that correct?

20 A. That's right.

21 Q. But you had alluded to an annual limit during  
22 direct that there is a restriction on what the  
23 City can take out in any kind of credit. Even  
24 our current physical recharge credit in any  
25 given year, so that restriction would apply,

1 correct?

2 A. Yes.

3 Q. And also, as we mentioned at the start of your  
4 redirect, there would be an impact from the  
5 City's concurrence with the condition and the  
6 point in the KSA operational plan, that we'll  
7 have to draw 40,000 acre feet in base rights  
8 first?

9 A. Yes.

10 Q. So it's not expressed in the permit conditions  
11 as a temporal restriction, but there will be an  
12 annual restriction on what we can take and it  
13 will have to be only after the 40,000 acre feet  
14 in base rights are drawn, whatever that means  
15 for the calendar?

16 A. Yes.

17 Q. Mr. Pajor, you don't have before you, or you do,  
18 you have the District exhibit books. Please  
19 turn to tab 15 in the District exhibit books.

20 MR. McLEOD: And I will give a document  
21 to the reporter to mark as Groundwater  
22 Management Districts 15.

23 (GMD Exhibit 15 was marked for  
24 identification by the Reporter.)

25 MR. McLEOD: Let me offer that for

1 admission.

2 THE HEARING OFFICER: Any objections?

3 No. The District's GMD 15 will be admitted.

4 BY MR. McLEOD:

5 Q. Mr. Pajor, you were having difficulty recalling  
6 yesterday the extent of that limit on what the  
7 City can take out in a year and physical  
8 recharge credits. The document before you I am  
9 going to represent is a supplemental response by  
10 the Department of Water Resources to a question  
11 that the District had asked them in discovery.  
12 And if you review that response you see a  
13 reference by the Division of Water Resources in  
14 there about what was that annual availability to  
15 take credits is?

16 A. Yes.

17 Q. And what is it?

18 A. 19,000 acre feet.

19 Q. Okay, I just wanted to get that into the record  
20 for completeness. Ms. Wendling had asked you  
21 some questions yesterday about lower index  
22 levels, and it seemed to me that you might have  
23 gone astray and answered her about lower water  
24 levels instead. She had asked you, for example,  
25 what is the benefit of lowering the 1993 index

1 levels. Focusing on the index levels, what is  
2 the benefit of lowering the index levels?

3 A. With lower index levels for recovery of our  
4 water, we'll be able to avoid pulling credits to  
5 avoid stranding them during a drought at the  
6 beginning of the early years of a drought,  
7 because we don't know what the drought duration,  
8 nor intensity, is going to be over time. So if  
9 we had lower levels to which we could recover  
10 those recharge credits, we could hold those  
11 recharge credits to match the need that we  
12 anticipate in later years of the drought from  
13 our modeled 1% drought event.

14 Q. And then on the flip side of that, I believe  
15 also with intent to inquire about the index  
16 levels, Ms. Wendling had asked you whether we  
17 were aware of any detriments of lowering the  
18 index levels?

19 A. Well, lowering the index levels don't provide a  
20 detriment, they provide a benefit because they  
21 reduce the frequency with which we'll be  
22 withdrawing the recharged credits.

23 Q. In the rare case, for purposes of what has been  
24 discussed at the hearing so far, the 1%  
25 exceedance drought, where the City actually has

1 to pump down so the water level declines to the  
2 new index level. Would there be potential  
3 adverse impact to any wells from that event?

4 A. Yes, there could be.

5 Q. Do you think that based on the measurement of  
6 the depth in the current proposed index levels,  
7 and the proposed newer lower index levels, that  
8 those well impacts could be redressed by  
9 extending the wells down by the same number of  
10 feet that we are changing the index levels?

11 MR. STUCKY: I will object. This is  
12 outside of the scope of this expert's knowledge  
13 and expertise.

14 MR. McLEOD: I will withdraw the  
15 question.

16 BY MR. McLEOD:

17 Q. I think also, Mr. Pajor, there was some  
18 confusion in what the City would need to address  
19 the 1% exceedance drought because tallying  
20 numbers in a table you came to a \$50,000 some  
21 figure and at some other points in your  
22 testimony you talked about a \$60,000 acre foot  
23 figure. Is the difference there attributable to  
24 leakage from the credits?

25 A. I think it's attributable to my math in

1 summarizing those numbers, but there is a  
2 leakage loss.

3 Q. So if you thought you were going to have to pump  
4 56,000 acre feet of credits you might need to  
5 accumulate initially more than that because of  
6 leakage?

7 A. Oh, absolutely because every year when the  
8 accounting report is run we have additional  
9 losses and the fuller the aquifer is the greater  
10 losses are.

11 Q. So it would be logical that you would need some  
12 margin above what you would actually account for  
13 credits to account for that leakage?

14 A. Certainly.

15 MR. McLEOD: I don't have further  
16 questions for the witness.

17 THE HEARING OFFICER: Are there other  
18 questions for this witness before he is excused?  
19 First I will ask DWR.

20

21 RE CROSS EXAMINATION

22 BY MR. OLEEN:

23 Q. Mr. Pajor, I believe yesterday Ms. Wendling had  
24 a line of questions with you about whether the  
25 City might try to withdraw all of its

1 accumulated recharged credits, whatever those  
2 are, at one time, or in a non drought situation.  
3 Do you remember that highly summarized line of  
4 questioning?

5 A. Yes, I do.

6 Q. Is it true that you had attempted to explain  
7 that it would not be in the City's economic  
8 interest to use recharged credits in a non  
9 prolonged drought situation?

10 A. That was my intent.

11 Q. The current proposal does not offer any specific  
12 condition in that regard though, isn't that  
13 true?

14 A. I am not sure if that's true or not.

15 Q. Let me ask it, the question this way. Droughts  
16 are difficult in that one doesn't know whether  
17 one is in a drought until one might be already  
18 deep in to one to some extent. Is that fair?

19 A. Absolutely.

20 Q. So I understand that recognizing when one is in  
21 a drought can be difficult, but what I want to  
22 know is whether the City has contemplated some  
23 sort of expressed condition that would be  
24 imposed as part of this proposal, such that the  
25 City could only withdraw accumulated recharge



1 credits under some defined drought situation?

2 A. I think that's very reasonable. I mean that's  
3 our intention, that's our need, that's our  
4 economic interest. So having that as a  
5 restriction or a requirement would be entirely  
6 consistent with our objectives and our  
7 intentions.

8 Q. So to the extent that an appropriate condition  
9 could be drafted, that would limit the City's  
10 withdrawal of recharged credits only in some  
11 certain defined drought situation, the City is  
12 open to such an express condition to be imposed  
13 as part of this proposal?

14 A. Yes.

15 Q. To your knowledge has GMD2, or the Intervenors,  
16 or anyone else proposed such a condition, an  
17 express condition?

18 A. Not to my knowledge. And certainly to my  
19 frustration they have not.

20 Q. And to your knowledge the exact language of any  
21 such condition has not been discussed amongst  
22 the parties to this matter?

23 A. Not to my knowledge.

24 MR. OLEEN: No further questions.

25 THE HEARING OFFICER: Mr. Stucky, go

1 ahead.

2 MR. STUCKY: Thank you.

3

4 RECROSS EXAMINATION

5 BY MR. STUCKY:

6 Q. Just a moment ago you were asked about some  
7 existing conditions as far as the AMC proposal,  
8 do you recall that question a moment ago?

9 A. Yes.

10 Q. And just to be clear for the record, the concept  
11 that these aquifer maintenance credits have to  
12 only be withdrawn during the time of drought,  
13 that's not currently part of the proposal; is  
14 that correct?

15 A. Not to my recollection, that's correct.

16 Q. Okay. And, in fact, there was a draft order  
17 that was provided by the chief engineer early on  
18 in this case; is that correct?

19 A. Yes.

20 Q. And in that draft order of the chief engineer,  
21 was that condition part of that draft order?

22 A. I don't recall the terms and conditions in that  
23 draft.

24 Q. I ask that you flip in the black notebook to the  
25 proposal correspondence.

1 A. (Witness reviews documents).

2 Q. It is the pink tab.

3 A. Okay.

4 Q. And I tell you what, it's a lot of documents,  
5 that are hard to pull out, so I will just show  
6 you.

7 MR. STUCKY: May I approach the  
8 witness?

9 THE HEARING OFFICER: Yes.

10 (City Exhibit 14 was marked for  
11 identification by the Reporter.)

12 MR. OLEEN: Mr. Stucky, what are you  
13 marking?

14 MR. STUCKY: The draft order.

15 MR. OLEEN: From where did you get  
16 this?

17 MR. STUCKY: About the middle of the  
18 black notebook under proposal correspondence  
19 halfway through.

20 MR. OLEEN: If it's the enclosure with  
21 the chief engineer's letter of June 1st, which  
22 it appears to be, I will later be having the  
23 letter itself be an exhibit.

24 MR. STUCKY: We can mark this there.

25 MR. OLEEN: Maybe have the whole

1 enclosure.

2 MR. STUCKY: Let's mark it as your  
3 exhibit.

4 MR. BOESE: May I interject? With the  
5 issue of the City's notebook, because once again  
6 we have duplex pages that are not applicable.  
7 It would be much more helpful because we'll end  
8 up with pages from other exhibits because they  
9 are duplex.

10 THE HEARING OFFICER: Which document is  
11 this again?

12 MR. STUCKY: Findings and Order in the  
13 Matter of Permit Conditions Under Appropriation  
14 of Water, File Number 46,714. It's a draft  
15 order.

16 THE HEARING OFFICER: Is it the marked  
17 up draft?

18 MR. OLEEN: May we go off the record?

19 THE HEARING OFFICER: Yes. Off the  
20 record.

21 (A short off-the-record discussion  
22 was held at this time.)

23 THE HEARING OFFICER: We are now back  
24 on the record.

25 MR. STUCKY: At this time I would like

1 to withdraw City's Exhibit 14 and I would like  
2 to have permission to approach the witness  
3 again?

4 THE HEARING OFFICER: That's fine.

5 MR. STUCKY: Let's mark this.

6 (DWR Exhibit 1 was marked for  
7 identification by the Reporter.)

8 BY MR. STUCKY:

9 Q. Mr. Pajor, I have handed you what has been  
10 marked as DWR Exhibit 1. Do you recognize that  
11 document? If I were to tell you that's a cover  
12 letter from the chief engineer of the Division  
13 of Water Resources and also has some enclosed  
14 draft orders, would you agree that's what that  
15 document is?

16 A. Yes, absolutely.

17 Q. Have you seen that document before?

18 A. I believe I have.

19 Q. Does that seem to be an accurate depiction and  
20 copy of what the chief engineer has proposed in  
21 the past in that regard?

22 A. It certainly appears to be and to the best of my  
23 recollection, yes.

24 MR. STUCKY: I would like to go ahead  
25 and move to admit DWR Exhibit 1 in to evidence.

1 THE HEARING OFFICER: Any objections?

2 DWR Exhibit 1 will be admitted.

3 BY MR. STUCKY:

4 Q. Mr. Pajor, if you could flip to I believe it's  
5 the, we'll go past the cover letter, and if you  
6 could flip to the, it's about the fourth part of  
7 that and it's called, Draft, June 1, 2018,  
8 Proposed Replacement F&O for Phase II. Have you  
9 found a document that's titled that?

10 A. Yes.

11 Q. I would ask you to flip to the permit  
12 conditions, I am sorry, to the order.

13 A. Okay.

14 Q. Can you tell me where in the order itself, in  
15 this draft order, first of all, it states that  
16 aquifer maintenance credits can only be  
17 withdrawn during a time of drought.

18 A. (Witness reviews documents). You are asking me  
19 to find that?

20 Q. Yes. And to save you some time would you just  
21 agree with me that it is not currently part of  
22 the draft order?

23 A. I would agree with you. I don't find it as part  
24 of the draft order.

25 Q. Just a moment ago during the redirect by Mr.

1           McLeod, you also testified that you believed  
2           that with respect to this draft order it was a  
3           proposed part of the order itself that the  
4           40,000 acre feet of native water rights would  
5           have to be pumped first. Do you recall that  
6           question?

7           A. I do recall that question.

8                         MR. OLEEN: I object, I think that  
9           misstates the witness' testimony. Are you  
10          saying, Mr. Stucky, you are characterizing his  
11          testimony of this proposed finding and order?  
12          Or the proposal? Maybe you used the order when  
13          you meant the word proposal. Maybe I misheard.

14                        MR. STUCKY: I believe the question by  
15          Mr. McLeod was whether or not it was an order.  
16          I heard that question pretty exactly.

17                        MR. McLEOD: I believe that the witness  
18          was asked to address whether that was part of  
19          the proposed conditions, and I think they were  
20          proposed in a letter, which will later be  
21          introduced, and the witness was also asked  
22          whether that was an existing point of the  
23          existing ASR operations plan, to which he said  
24          that it is.

25                        MR. OLEEN: I withdraw my objection. I

1 just want to make sure we are being precise in  
2 what we are referring to.

3 BY MR. STUCKY:

4 Q. To be precise in what we are referring to, we  
5 are still referring to DWR Exhibit 1; is that  
6 correct?

7 A. Okay.

8 Q. And now that you have had a little chance to  
9 look at the order portion of that document,  
10 would you agree with me that there actually is  
11 no condition in that draft order portion that  
12 requires the City to first pump its 40,000 acre  
13 feet of native water rights before it can  
14 withdraw aquifer maintenance credits, would you  
15 agree with that statement?

16 A. Yes.

17 Q. And, in fact, if we were to pull up the official  
18 order of ASR Phase II, and we look at the order  
19 language of ASR Phase II, would you also agree  
20 that there is actually no requirement in the  
21 order conditions that the 40,000 acre feet of  
22 native water rights must be pumped first before  
23 recharged credits can be withdrawn?

24 A. I don't have knowledge of that.

25 Q. Well, maybe I misunderstood your testimony. A



1 moment ago I thought you testified in that  
2 regard. So if your testimony at this point is  
3 that you don't have knowledge of that aspect, I  
4 will move on.

5 Now, you also indicated just a few  
6 moments ago that when you spent time on the  
7 Equus Beds Groundwater Management Board, you  
8 have had the opportunity to review additional  
9 permits and appeals that have come before the  
10 Board. Do you recall that testimony again?

11 A. Yes.

12 Q. And, in fact, I believe that, well, let me ask  
13 you this. How many years have you served on the  
14 Equus Beds Groundwater Management Board?

15 A. Approximately nine years yesterday and  
16 approximately nine years plus one day today.

17 Q. All right. So through that board service, you  
18 have had the opportunity to consider, and I am  
19 going to ask, and we can ask it in a moment  
20 about whether or not you and abstained during  
21 those votes, that's not what I am asking; but  
22 during your board service, the ASR Phase II  
23 permits would have come up for review before the  
24 Board; is that correct?

25 A. I believe that's correct.

1 Q. And again, without looking at the record it's  
2 very possible you would have abstained, but at  
3 the very least on the official vote, but at the  
4 very least you would have heard the discussion  
5 with respect to the ASR Phase II permits, is  
6 that a true statement?

7 A. I cannot, from my recollection, determine  
8 whether or not that's a true statement. I mean,  
9 do you know when those permits would have been  
10 issued?

11 Q. If I were to tell you the last, last one was  
12 approved in 2010, would you agree that that  
13 would be --

14 A. That's within the margin of error of my estimate  
15 of when I started on the Board.

16 Q. Okay.

17 A. I cannot say definitively whether I was on the  
18 Board or not when that happened.

19 Q. Let me ask you this, to see if you can answer  
20 this question based on your board service or  
21 general knowledge of your ASR Phase II permits.  
22 Is it true that a number of, well, let me ask  
23 you this. Do you know what spacing requirements  
24 mean?

25 A. Regarding well spacing?

1 Q. Yes. Well spacing permit.

2 A. Yes.

3 Q. Can you, for a clear record, explain what  
4 spacing requirements are for a well permit.

5 A. Spacing requirements for wells are set to  
6 ensure, to protect against well to well  
7 interactions. And they are different for  
8 residential than they are for non residential  
9 wells. I am not sure, I can't share very many  
10 particulars off the top of my head. I can tell  
11 you that.

12 Q. With respect to ASR Phase II there were spacing  
13 requirements for those permits, is that a true  
14 statement?

15 A. I am sure.

16 Q. And if I were to tell you that the spacing  
17 requirements, for example, domestic wells was  
18 660 feet, would you agree with that statement?

19 A. I would.

20 Q. Now, if I were to also tell you that a number of  
21 those ASR Phase II permits did not meet those  
22 spacing requirements, would you agree with that  
23 statement?

24 A. Yes, I would.

25 Q. Would you also agree with the statement that

1 over a dozen of those ASR Phase II permits  
2 required what are called spacing waivers?

3 A. Yes, I would.

4 Q. Can you explain for the record what a spacing  
5 waiver is.

6 A. Spacing waiver is granted by a water rights, or  
7 water well owner, to allow encroachment by a  
8 subsequent applicant within the 660 foot  
9 distance of protection.

10 Q. So if you would have sought spacing waivers,  
11 with respect to these ASR Phase II permits, do  
12 you recall, have a recollection of whether or  
13 not they were granted?

14 A. My recollection is they were granted.

15 Q. Now, let me ask you this, if those ASR Phase II  
16 spacing waivers had certain conditions that they  
17 were based upon, would those same conditions now  
18 apply to the City's new proposal?

19 A. I can't speak to the legal mechanism of  
20 application, but I think it is reasonable that  
21 they would apply.

22 Q. Okay. Now, just a moment ago you were asked  
23 some questions about water that was left in a  
24 water bottle. Do you recall that discussion?

25 A. Yes.

1 Q. I want to start out by asking you to flip in the  
2 District's white notebook. And it would be  
3 Volume 1 of the District's notebooks.

4 MR. STUCKY: May I approach the  
5 witness?

6 THE HEARING OFFICER: Yes.

7 MR. STUCKY: I would like to go ahead  
8 and mark the District's Exhibit Number 8.

9 (GMD Exhibit 8 was marked for  
10 identification by the Reporter.)

11 BY MR. STUCKY:

12 Q. I have marked what's GMD 8. Do you recognize  
13 that document?

14 A. Yes.

15 Q. And just generally speaking, what is it?

16 A. It is a City of Wichita's response to the  
17 Groundwater Management District's second  
18 interrogatories.

19 Q. And to save time I flipped to a page where the  
20 signature portion of that document is; is that  
21 correct?

22 A. Yes.

23 Q. And would you agree that that is, in fact, your  
24 signature on this document?

25 A. Yes, it is.

1 MR. STUCKY: And again, I would like to  
2 formally admit this in to evidence.

3 MR. McLEOD: No objection.

4 THE HEARING OFFICER: GMD 8 will be  
5 admitted. And, Mr. Stucky, could you come look  
6 at my book and make sure I have the same  
7 document?

8 MR. STUCKY: Yes.

9 THE HEARING OFFICER: Thank you.  
10 Please go ahead.

11 BY MR. STUCKY:

12 Q. I would like to start by asking you to flip to  
13 question Number 12 in this particular document.

14 A. (Witness complies). Okay.

15 Q. Question Number 12, would you agree the  
16 question, and I will read it to you, it says:  
17 Please specify whether any of the following will  
18 occur when an AMC is accumulated as opposed to a  
19 physical recharge credit, prejudicially affect  
20 the public interest and impair existing water  
21 rights, and I won't read the full question. But  
22 do you see that particular question?

23 A. Yes.

24 Q. And there is an answer, and in that particular  
25 answer there is a discussion of how an AMC would

1 be withdrawn; is that correct?

2 A. Yes, it is.

3 Q. And I am going to back up just a moment. When  
4 an AMC is accumulated, I want to walk through  
5 the mechanics of that again, because there have  
6 been a number of questions. When an AMC is  
7 accumulated, and again we keep using this  
8 analogy of a gallon of water. If a gallon of  
9 water is taken from the Little Arkansas River  
10 during the time of overflow, it's treated, and  
11 it's diverted directly to the City, and that  
12 gallon of water would be used by the City; is  
13 that correct?

14 A. Yes, it is.

15 Q. And at a later time, and when that gallon of  
16 water is used by the City during that process,  
17 the City would acquire an aquifer maintenance  
18 credit for approximately another gallon of  
19 water; is that correct?

20 A. From the gallon of water we didn't remove from  
21 the aquifer, that gallon, that's what we get it  
22 for. We retagged a gallon of water in the  
23 aquifer as our AMC credit. It was water in the  
24 aquifer, it is now tagged, that gallon is tagged  
25 as AMC water, because it was not removed and

1 taken to town, because it wasn't needed because  
2 we took water through the plant and met that  
3 demand for that gallon in town. So we relabeled  
4 one gallon of water in the aquifer.

5 Q. And I understand your answer. And I am really  
6 not trying to trick you, Mr. Pajor. So follow  
7 me once again. We take a gallon of water to the  
8 city and for that gallon of water we take to the  
9 city, an aquifer maintenance credit would be  
10 accumulated. Let's say one aquifer maintenance  
11 credit.

12 A. Okay.

13 Q. At a later time, at a subsequent time then,  
14 would the city be able to withdraw a subsequent  
15 gallon of water from the aquifer?

16 A. At a subsequent point in time, the city would be  
17 able to withdraw the relabeled gallon of water  
18 in the aquifer, subject to the losses that occur  
19 from cell to cell and ultimately losses that  
20 occur out of the edge of the aquifer to the  
21 river. Subject to those losses, it's that  
22 relabeled gallon that we are able to recover.

23 Q. So subject to those losses, the answer to my  
24 question is yes; is that correct?

25 A. That is correct.



1 Q. Okay. And, in fact, if we were to read from  
2 interrogatory Number 12, what you wrote in  
3 interrogatory Number 12 is, and I am looking at  
4 the top of Page 8, very top of Page 8, it says:  
5 Subsequent withdrawal of the AMCs will result in  
6 a water level change equivalent to recovery of a  
7 recharge credit. End quote. Do you see where I  
8 am reading?

9 A. Yes.

10 Q. So, in other words, taking out this AMC at a  
11 subsequent time, and again I am using your  
12 language, at a subsequent time, would be similar  
13 to taking a gallon of water as if the City was  
14 diverting a later recharge credit, is that what  
15 you are saying?

16 A. Yes, I am.

17 Q. Now, let's go to the example of the water  
18 bottle. Let's say that I walked in to this  
19 room, and I am already tired from just having  
20 shoulder surgery and I am thirsty and I want to  
21 drink a water bottle, okay? And I have a water  
22 bottle and it is full. If I set it over here on  
23 the table, would you agree that I haven't drank  
24 that water bottle (indicating)?

25 A. Yes.

1 Q. Okay. Now, if I were to pull another water  
2 bottle off the table, and I were to drink this  
3 entire water bottle, would you agree then, let's  
4 assume, so I don't have to drink it in front of  
5 everybody in the room, let's just assume with me  
6 that I drank that water bottle and the bottle is  
7 now empty. Do you follow me?

8 A. Yes.

9 Q. Would you agree that that water was consumed and  
10 is now gone?

11 A. Yes.

12 Q. Okay. On the other hand, would you agree that  
13 this water bottle that I left in storage on the  
14 table is still full?

15 A. Yes.

16 Q. Now, moving back to the concept of an aquifer  
17 maintenance credit, if we analogize the water  
18 directed to the city, directly to the city for  
19 municipal use, would that at least be analogous,  
20 could you follow me for a moment, would that be  
21 analogous to me consuming a bottle of water?  
22 Would you agree that just like the city would  
23 consume that gallon of water, it would be  
24 similar to me drinking a bottle of water at the  
25 table. And I get that there is a lot of

1 technical differences, but just in a very  
2 fundamental level, would you agree that the  
3 water would be consumed by the city just like I  
4 would consume this bottle of water?

5 A. I am not sure I can agree with that because I am  
6 developing in my mind a parallel analogy that  
7 works differently than that. And maybe that's  
8 the problem we are having communicating on this.  
9 To me, you have a bottle of water there, and  
10 instead of consuming it, you are going to go out  
11 and use the water fountain, you will use the  
12 water fountain, so the water is still there. I  
13 am not --

14 Q. If I open this water right now I could drink it,  
15 correct?

16 A. Yes.

17 Q. It's available for me to drink; is that correct?

18 A. Yes.

19 Q. And, in fact, I just drank some of it, is that  
20 correct?

21 A. Yes.

22 Q. And so, in fact, just because it's left in  
23 storage on the table doesn't mean it can't be  
24 later consumed; is that correct?

25 A. Correct.

1 Q. So just back up with me for a moment. If this  
2 water, would you agree that similar to me  
3 drinking a bottle of water, and it's consumed,  
4 would you also agree that when a gallon of water  
5 is diverted to the city it's consumed by the  
6 city, would you agree with that premise?

7 A. I would agree.

8 Q. And would you also agree with the premise that  
9 just like I left this bottle of water  
10 unconsumed, with the aquifer maintenance credit  
11 proposal, a gallon of water would be left in the  
12 aquifer? Would you agree with that?

13 A. Yes.

14 Q. Would you also then agree that that gallon of  
15 water, just like I could drink this bottle of  
16 water at a later time, would you also agree that  
17 that gallon of water could be consumed by the  
18 city at a later time?

19 A. Yes.

20 Q. Okay. Now, let me ask you this about the water  
21 that is later consumed pursuant to an aquifer  
22 maintenance credit, okay? Where does that water  
23 come from? Does it come from the aquifer?

24 A. Yes.

25 Q. Now, I know you are going to tell me that's

1 water left in storage, but just so I am clear,  
2 would that be water that would be already  
3 appropriated by other permits?

4 MR. McLEOD: I am going to ask for a  
5 clarification. What's meant by other permits?  
6 Are you including the City's base right permits?

7 MR. STUCKY: Yes, I am including the  
8 City's based rights permits, I am including  
9 irrigators that may be in the room, I am  
10 including everybody's permit in the City's well  
11 field. That's the question.

12 BY MR. STUCKY:

13 Q. Would it already be water that is appropriated  
14 pursuant to other permits?

15 MR. McLEOD: And I am going to object  
16 now based on all the objections hitherto to by  
17 opposing counsel that the witness lacks the  
18 ability and expertise to speak to questions of  
19 that nature.

20 MR. STUCKY: Well, this isn't a  
21 technical question. This isn't asking for  
22 knowledge of hydrology, this isn't asking for  
23 asking for knowledge of hydro geology. The  
24 witness testified a moment ago that he has a  
25 basic understanding of approval of permits, and

1 as it's gone before the Board, and he has a  
2 basic understanding of the mechanics of a water  
3 right. This question is just about the  
4 mechanics of a water right. And the question is  
5 simply, where this water is coming from. It's  
6 not, it's not a technical question, it's not, I  
7 am not asking him to interpret the proposal or  
8 anything of that nature. It is just a very  
9 fundamental question asking if the witness knows  
10 whose water this is.

11 MR. McLEOD: The question is spatially  
12 asking for the witness to give a legal opinion  
13 on whether the water in the aquifer that's  
14 subject to an AMC is already appropriated by  
15 other permits. It is a legal opinion that's  
16 being called for, it's spatially a legal  
17 opinion.

18 THE HEARING OFFICER: I am not  
19 convinced that, forgive my voice, it seems to me  
20 that the question of whether or not water is  
21 appropriated under an appropriation right permit  
22 is a legal question. That's a fact question.  
23 So I will let the question go forward and the  
24 witness can answer, if he knows.

25 BY MR. STUCKY:

1 Q. Do you recall the question, Mr. Pajor?

2 A. I do recall the question. And my problem with  
3 the question is, water rights to withdraw  
4 physical water from an aquifer do not ever have  
5 to be tied out to the inventory of the water in  
6 the aquifer. Indeed, we live in a state in  
7 which the state, by its own decision, its own  
8 policy, has created rights to remove more water  
9 than the aquifer has available.

10 So when you ask the question, is that  
11 water that I characterized as relabeled, ASR  
12 water, already spoken for to other water right  
13 holders permits, I am not sure that I can  
14 connect those dots.

15 Q. Let me ask you the question this way. Yesterday  
16 I asked you some questions about whether or not  
17 the City's well field in the Equus Beds aquifer  
18 is over appropriated, do you recall the  
19 question?

20 A. Yes.

21 Q. And your answer was it's over appropriated; is  
22 that correct?

23 A. That is correct.

24 Q. So, in other words, would you agree that all the  
25 water that exists within the Equus Beds, the

1 City's well field, in the Equus Beds is already  
2 appropriated for someone's use?

3 A. Yes.

4 Q. So if you just follow me again, with this  
5 analogy, and we assume that all the water in the  
6 Equus Beds well field is already appropriated  
7 for someone's use, would you also agree with me  
8 that when this gallon of water is consumed  
9 pursuant to an aquifer maintenance credit,  
10 that's water that's already been dedicated to  
11 somebody's use?

12 A. The problem with that question is to the extent  
13 that I answered yes to your last question, it is  
14 impossible to use the aquifer as a storage  
15 vessel for physical recharge credits. Because  
16 when I put that physical recharge credit water  
17 in, you are now going to argue with that line of  
18 questioning that you just had that it's already  
19 spoken for by others. I can never go back and  
20 get it out because it's an over appropriated  
21 aquifer. All the water in there is spoken to.  
22 To this point, Chief Engineer Barfield has often  
23 used an analogy of different color of water.  
24 And that is my version of a labeled gallon of  
25 water that is now relabeled as ASR water.



1 That's a physical recharge credit, has to be  
2 able to achieved. We have an existing permit  
3 that says we can achieve a physical recharge  
4 credit. Your argument now suggests we can't  
5 produce physical recharged credits because we  
6 are in an over appropriated aquifer.

7 Q. And again, Mr. Pajor, I am really not trying to  
8 trick you in any means, I think just a moment  
9 ago --

10 MR. McLEOD: I will renew the  
11 objection. I think at this point it's become  
12 clear there is a legal argument in process  
13 between counsel and the witness.

14 MR. STUCKY: I think it's a simple  
15 question of whether or not the water is already  
16 dedicated to somebody else, and I can ask a few  
17 foundational questions to get to the point  
18 again.

19 THE HEARING OFFICER: I am not sure you  
20 are making progress. You and the witness don't  
21 seem to be seeing eye to eye. If you could ask  
22 a different way, or possibly move on.

23 MR. STUCKY: Okay. I will.

24 BY MR. STUCKY:

25 Q. Let me ask you this. With respect to a physical

1 recharge credit, when a gallon of water is put  
2 by the City in to the aquifer, would you agree  
3 that that is water dedicated to the City that  
4 the City can later take out and withdraw at a  
5 later time?

6 A. Not under the argument that you were just  
7 making.

8 Q. Well, a moment ago I think you said that all the  
9 water in the aquifer is already dedicated for  
10 use, and it is fully appropriated and dedicated  
11 for use by the users of the aquifer; is that  
12 correct?

13 A. No, sir. It's over appropriated.

14 Q. It's over appropriated?

15 A. It's worse than your assertion.

16 Q. So every gallon of water is dedicated in that  
17 aquifer to somebody; is that correct?

18 A. To a couple of somebodies.

19 Q. Yeah. To a lot of somebodies; is that correct?

20 A. Yes.

21 Q. So just so I am clear, if the City diverts that  
22 subsequent gallon of water out of the aquifer,  
23 pursuant to an aquifer maintenance credit, is  
24 that water that was already dedicated to  
25 somebody, one of those somebodies you just

1 referred to?

2 A. This is why the functional equivalent is so  
3 important. Your argument can't stop at AMCs, it  
4 has to role over physical recharge credits, too.  
5 To the extent it's valid and we put water in and  
6 try to get it back later or leave water in and  
7 try to get it later, if the reason we can't get  
8 it later is because the aquifer is over  
9 appropriated, it's over appropriated for  
10 everyone and all types of ASR.

11 MR. STUCKY: Madame Hearing Officer, I  
12 hate to do this but the last question was a  
13 simple yes-or-no question. It is just  
14 paraphrased the language used by the witness, it  
15 was a yes-or-no question, could you please  
16 direct the witness to answer the question in a  
17 yes or no format.

18 THE HEARING OFFICER: Would the witness  
19 please answer the question.

20 A. Yes, Madame Hearing Officer, if counsel would  
21 restate the question for my clarity, please.

22 Q. If a gallon of water is taken out of the aquifer  
23 at a subsequent time, and that is, in fact,  
24 water that's already dedicated to one of those  
25 many somebodies that used the water in the

1           aquifer, would that gallon of water then be  
2           taken from water that's already dedicated to  
3           those many somebodies?

4       A.    Yes.

5       Q.    Okay.  Now, if we back up just for a moment with  
6           respect to a physical recharge credit, would you  
7           agree that when there is a physical recharge  
8           credit accumulated, the City is actually putting  
9           a gallon of water in to the aquifer?

10      A.    Yes.

11      Q.    And would you also agree that when an aquifer  
12           maintenance credit is accumulated, the City is  
13           not actually diverting or pumping a gallon of  
14           water in to the aquifer?  Again, it's a  
15           yes-or-no question, Mr. Pajor.

16      A.    Yes.  Let's move on.

17      Q.    All right.  Now, I would ask that you flip to  
18           Exhibit 1, which is the City's proposal.

19      A.    (Witness reviews documents).

20      Q.    I ask that you flip to 41 of the City's  
21           proposal, City's Page 41 of the City's proposal.  
22           Are you on that page?

23      A.    Yes.

24      Q.    Now, at the very bottom of that page, it says:  
25           DWR, GMD2 staff and the City have each conveyed

1 interest in developing a simplified accounting  
2 method for AMCs. Do you see where I am reading?

3 A. Yes.

4 Q. And when Mr. McLeod was asking you questions you  
5 testified to the accounting methodology for the  
6 aquifer maintenance credits. Do you recall that  
7 question?

8 MR. McLEOD: That mischaracterizes the  
9 witness' testify. The witness was asked about,  
10 and testified about, orders by the chief  
11 engineer with respect to the accounting method  
12 and the accounting for physical recharge credits  
13 that have been approved in the past.

14 THE HEARING OFFICER: Could you  
15 restate?

16 MR. STUCKY: I will restate.

17 BY MR. STUCKY:

18 Q. Do you have any familiarity with the accounting  
19 methodology for aquifer maintenance credits?

20 A. I have very limited knowledge; but some, yes.

21 Q. And, in fact, yesterday did you testify, at  
22 least in a limited regard, to the accounting  
23 methodology for aquifer maintenance credits?

24 A. Yes, I did.

25 Q. Now on this particular page that I referred you

1 to in that paragraph, could you read for me into  
2 the record the second two sentences of that  
3 paragraph.

4 A. In addition, using the current accounting  
5 process for AMCs would be impractical as the  
6 physical ASR recharge accounting relies on a  
7 comparison of groundwater modeling results that  
8 utilize actual metered physical recharge values  
9 compared to actual water levels. There would be  
10 no observed water level to compare the AMC  
11 results against, since the location of the AMC  
12 recharge would be theoretical.

13 Q. So just a couple of things, so I am clear about  
14 this. The reason why there would be no reason  
15 for metering with respect to an aquifer  
16 maintenance credit, as it says in that first  
17 sentence, is because no water would be pumped or  
18 diverted in to the aquifer; is that correct?

19 A. That is correct.

20 Q. And also in the second sentence, the reason why  
21 it says that AMC recharge would be theoretical  
22 is because no actual physical recharge would  
23 occur; is that correct?

24 A. Correct. Because it's a relabeling of that  
25 gallon.

1 Q. Okay. I would like you to, well, let me ask it  
2 this way. Is it true that without an attempt to  
3 accumulate a physical recharge credit, is it  
4 true that the City has already diverted water  
5 directly from the Little Arkansas River to the  
6 City for its use?

7 A. Yes, that's correct.

8 Q. And, in fact, that was done in a time when the  
9 Equus Beds well field, or the City's well field  
10 the Equus Beds aquifer, was already full; is  
11 that correct?

12 A. Yes, that's the only reason we would have taken  
13 that water to town.

14 Q. And is the reason that you were able to take  
15 that water to town because the City's existing  
16 ASR II permit has two uses in the permit, is  
17 that a true statement?

18 A. That's a true statement.

19 Q. And if I were to tell you that the two uses of  
20 the existing ASR II permit are for municipal  
21 use, number one; and for recharge credits,  
22 number II. Would you agree with that statement?

23 A. Yes, I would.

24 Q. And so when that water is diverted directly to  
25 town, it's being used for municipal use, that's

1 the beneficial use; is that correct?

2 A. Yes.

3 Q. When that water was pumped directly to town, and  
4 no recharge credit was accumulated during that  
5 gallon being pumped, would you agree that's the  
6 only beneficial use being made of that water?

7 A. No, I would not. There is a beneficial use of a  
8 gallon of water that was not removed from the  
9 aquifer to meet that same demand of our  
10 customers.

11 Q. Where in your ASR Phase II order does it have  
12 that third beneficial use that you are referring  
13 to?

14 A. It doesn't.

15 Q. So that's --

16 A. To my knowledge.

17 Q. So I am asking just about those two beneficial  
18 uses that are in the ASR Permit II, and again,  
19 there is no attempt to deceive you with those  
20 questions. Well, first of all, let me ask you  
21 this. Do you know how many gallons of water  
22 have been diverted to the City where no physical  
23 recharge credit was accumulated?

24 A. No, I don't.

25 Q. I would ask that you flip in the black notebook



1 to the City's correspondence. It's the pink tab  
2 called proposal correspondence.

3 A. Okay.

4 Q. And if you walk with me for just a moment, I  
5 flip pages a little slower than others right  
6 now.

7 A. I should be able to keep up then.

8 Q. Yes. It's obviously toward the end of this  
9 particular document.

10 MR. STUCKY: May I approach the  
11 witness?

12 THE HEARING OFFICER: Yes.

13 BY MR. STUCKY:

14 Q. There you go. Just to refresh the witness'  
15 memory in this regard, I have asked that you  
16 flip in the City's Exhibit notebook to a  
17 document that was written by Mr. Barfield to the  
18 City on May 22, 2018. Is that a true statement?

19 A. Yes, it is.

20 Q. I am sorry, I mischaracterized, I apologize, it  
21 was a letter written by the City to Mr.  
22 Barfield. Is that a true statement?

23 A. That's even more true, yes.

24 Q. Okay. I mischaracterized, my mistake. So, in  
25 fact, if we were to flip to the last page of

1           that document, there is a signature page on page  
2           127 of this document. And that document was  
3           signed by Alan King; is that right?

4   A.   That is correct.

5   Q.   So would you agree that this would characterize  
6           an official opinion or statement that was made  
7           by the City?

8   A.   Yes, I would.

9   Q.   Now, I would ask that you flip to page 125 of  
10          that document. And I want you to read to me  
11          from the very bottom of page 125 of that  
12          document for the record.

13   A.   Number 10, for 2014 and 2015 a total of 1,132.19  
14          acre feet was diverted to town and could have  
15          been diverted to AMCs. Any calculation related  
16          to years prior than 2014 would be highly  
17          speculative in nature.

18   Q.   So a moment ago I asked you, at least, let's  
19          focus on the years 2014 and 2015. Would you now  
20          have an opinion, at least for those years, as to  
21          how much water was sent directly to the City for  
22          municipal use where no recharge credit was  
23          accumulated?

24   A.   Yes.

25   Q.   What would be your answer?

1 A. 1,132.19 acre feet.

2 Q. Now, if we were to focus on the ASR II, order  
3 and permit, and those accompanying documents,  
4 would you agree that that water was used as a  
5 municipal beneficial use?

6 A. Yes, I would.

7 Q. And would you also agree with me that that water  
8 was not used pursuant to the other beneficial  
9 use. Namely, the recharge credit beneficial  
10 use?

11 A. With that argument you can't have AMCs. And I  
12 know that's where you are trying to get me to.

13 Q. Well, I am just asking you to answer the  
14 question.

15 A. Sure. I will answer it yes.

16 Q. All right. Now, if we were to, well, you were  
17 asked a few moments ago some questions by Mr. --  
18 well, I want to back up also just to clarify the  
19 record.

20 Yesterday you were asked how many  
21 permits the City had, and I believe your answer  
22 was five. Is that correct? I am sorry, how  
23 many water rights the City has. I am sorry.  
24 Mr. Oleen, I misspoke. Mr. Oleen asked you  
25 yesterday how many water rights account for the

1 40,000 acre feet owned by the City? Do you  
2 recall that questioning yesterday?

3 A. I do.

4 Q. And I believe it was stated there were five?

5 A. I believe that's what was said.

6 Q. Could you name those five water rights?

7 A. No, sir, I could not.

8 Q. If I were to tell you, to clarify the record  
9 today, that there were actually three water  
10 rights, would you have reason to disagree with  
11 me?

12 A. I would not.

13 Q. Now, it is my understanding that with respect to  
14 aquifer maintenance credits and the City's  
15 proposal, well, let's just focus on lowering the  
16 minimum index level of the proposal. Would  
17 lowering the minimum index level apply to the  
18 existing ASR Phase II permits?

19 A. Yes.

20 Q. What about, would it apply to any future Phase  
21 II applications?

22 A. I don't know. We haven't made such  
23 applications.

24 Q. Well, from your knowledge, having sat on the  
25 Board, and your knowledge of approvals of

1           permits on the Board, do you have an opinion in  
2           that regard, as you are sitting here today?

3       A.    No.

4       Q.    And so you don't have an opinion, as you are  
5           sitting here today, whether or not the lowering  
6           of the minimum index level, if that change would  
7           apply to future permits of the City, or future  
8           applications of the City, you are not prepared  
9           to answer that question; is that correct?

10      A.    That's right.

11      Q.    Okay.  If I were to tell you that the draft  
12           order that we admitted as DWR Exhibit 1 just a  
13           moment ago, if I were to tell you that that  
14           order refers to all existing permits of the  
15           City, and all future permits of the City, would  
16           you have reason to disagree with me?

17      A.    I would not.

18      Q.    Are you familiar with the concept of ASR Phase  
19           III?

20      A.    Yes.

21      Q.    Can you tell me what ASR Phase III is.

22      A.    It is one of several different alternatives that  
23           we have considered for future development and  
24           expansion of the capacities and capabilities of  
25           ASR.

1 Q. Has there been any application made for grant  
2 funding for ASR Phase III?

3 A. Yes.

4 Q. What was the result of that application?

5 A. We were unsuccessful in receiving the grant  
6 funds, is my recollection.

7 Q. Pursuant to ASR Phase III, would one of the  
8 goals of ASR Phase III be to put additional bank  
9 storage wells in to place along the Little  
10 Arkansas River?

11 A. Potentially.

12 Q. And let me just ask you this, if additional bank  
13 storage wells were put in to place along the  
14 Little Arkansas River, would that increase the  
15 City's capacity to accumulate aquifer  
16 maintenance credits?

17 A. Am I to assume we have such things?

18 Q. If they were to be put in place would that  
19 increase the City's capacity to accumulate  
20 aquifer maintenance credits?

21 A. Not in and of itself, it would be subject to the  
22 availability of not being able to recharge the  
23 aquifer, otherwise it would be physical recharge  
24 credits we would be producing.

25 Q. If the aquifer was full and you were unable to

1 recharge the aquifer, and the City were to put  
2 in to place additional bank storage wells, would  
3 that increase the City's capacity to accumulate  
4 AMCs?

5 A. Yes, it would.

6 Q. Yesterday, and I just, I am not sure I am clear  
7 on this question. Yesterday there was a  
8 question about the 120,000 acre feet of  
9 recharged credits and there was some questions  
10 with regard to that. And it was indicated that  
11 50,000 acre feet of credits would be needed  
12 during a 1% drought; is that right?

13 A. I believe that was my statement and I would  
14 suggest that that number was an approximate  
15 number. The number may actually be 60 or 60  
16 plus thousand.

17 Q. Okay. And I just, I want to characterize the  
18 testimony yesterday of Mr. Winchester, which you  
19 heard, his testimony was that a 1% drought  
20 occurs once every 100 years; is that right?

21 A. No.

22 Q. Well, was it his testimony that although you  
23 can't predict when a 1% drought will occur, when  
24 we are calculating a 1% drought we are looking  
25 at an event that we are predicting will occur

1           once every 100 years, is that a 1% drought?

2       A.    No.

3       Q.    What is your definition of a 1% drought?

4       A.    There is a 1% probability of that drought  
5           occurring every year.

6       Q.    So if we were to multiply 1 x 100 to come up  
7           with 100 years, do you follow my math so far, 1  
8           x 100 is 100; is that correct?

9       A.    Yes.

10      Q.    And if we were to then assume that in any given  
11           year, well, if, then statistically speaking a 1%  
12           drought could occur, would most likely occur in  
13           one time in a 100 years; is that right?

14      A.    No. That is not right. You cannot add up the  
15           1% probabilities for 100 times and be assured of  
16           a 1% drought in that 100 year period. It's  
17           statistics.

18      Q.    I understand, I am not saying we are assured of  
19           it, I understand statistics, and I am not saying  
20           we are assured of it. But if we were to play  
21           the averages, if we were to assume and play the  
22           averages, statistically would a 1% drought  
23           generally happen just once in a 100 years?

24                   MR. McLEOD: I am sorry, in the  
25           questioning if we were to assume what?



1 MR. STUCKY: If we were to just assume  
2 these percentages, assume that these  
3 calculations as far as how we are characterizing  
4 a 1% drought.

5 BY MR. STUCKY:

6 Q. Let me ask you this. If you were to be an odds  
7 maker, if you were to predict when, if the City  
8 is trying to predict when a 1% drought would  
9 occur, how many times, if you were an odds maker  
10 and you were playing the bets at Vegas, how many  
11 times would you predict that a 1% drought would  
12 occur within 100 year period?

13 A. It would be irresponsible for me to answer that  
14 question as a utility executive. That isn't the  
15 way we approach it.

16 Q. All right. So as you are sitting here today,  
17 you don't have an answer to that question; is  
18 that correct?

19 A. I am telling you the question is inappropriate.

20 Q. Okay. Is the question unclear? Or how could I  
21 better clarify or rephrase?

22 A. You could describe the 1% probability drought as  
23 having a 1% probability of occurring each and  
24 every year. I feel like I am watching the 6:00  
25 o'clock news and somebody just said we had the

1 100 year flood last year, this can't be 100 year  
2 flood. It certainly can. That's my problem.

3 Q. No, I think we are saying two different things.

4 MR. McLEOD: At this point I am going  
5 to say asked and answered multiple times, and  
6 also I will point out Mr. Pajor has not been  
7 qualified to speak as a statistician, and I  
8 think counsel is roaming in to an area where he  
9 has not been qualified as an expert.

10 MR. STUCKY: I can move on.

11 THE HEARING OFFICER: Let's move on.

12 MR. STUCKY: Okay. Fair enough.

13 BY MR. STUCKY:

14 Q. I am going to ask that you flip in the District  
15 Exhibit notebook in Number 14 in the District  
16 exhibits. I think I asked you to flip to the  
17 wrong document.

18 A. I am at DWR's responses to GMD2's second set of  
19 admissions.

20 Q. I am sorry, I would like for you to flip to  
21 Exhibit Number 6.

22 A. Okay.

23 Q. If you were to flip to the last page of that  
24 document, would you agree that that is, in fact,  
25 or one of the last pages of that document, would

1           you agree that that is, in fact, your signature  
2           on one of the last pages of that document?

3       A.    I would agree that on Page 17 that's my  
4           signature.

5                       MR. STUCKY:   At this time I would like  
6           to mark GMD's Exhibit 6.

7                       (GMD Exhibit 6 was marked for  
8           identification by the Reporter.)

9       BY MR. STUCKY:

10      Q.   Just a moment ago I think you examined the GMD  
11           Exhibit 6 and acknowledged the fact that those  
12           are interrogatories that were sent to the City  
13           by the District; is that correct?

14      A.   These are responses to those, correct.

15                       MR. STUCKY:   I would like to move to  
16           admit GMD 6 in to evidence.

17                       THE HEARING OFFICER:   Any objection?

18                       MR. McLEOD:   No objection.

19                       THE HEARING OFFICER:   GMD 6 will be  
20           admitted.

21      BY MR. STUCKY:

22      Q.   Just a moment ago you were asked some questions  
23           about multiyear flex accounts and you, you were  
24           asked about an Exhibit 13 of the City; is that  
25           correct?

1 A. Yes.

2 Q. And in response to, the response that was made  
3 by the City documented the analysis that was  
4 performed with respect to multiyear flex  
5 accounts; is that right?

6 A. Yes.

7 Q. And in the response that you read for the  
8 record, would you agree that what was stated was  
9 that someone from the Division of Water  
10 Resources advised the City that it was not the  
11 best idea to utilize multiyear flex accounts?

12 MR. McLEOD: Just on characterization,  
13 was the question meant to seek that was part of  
14 what was stated?

15 MR. STUCKY: Yes.

16 BY MR. STUCKY:

17 Q. If we could go back to interrogatory number 19  
18 of the City's Exhibit 13.

19 A. (Witness reviews documents). Can you tell me  
20 where to find that?

21 MS. WENDLING: In the lime binder.

22 MR. OLEEN: Did you perhaps mean  
23 Exhibit 15, Mr. Stucky?

24 MR. STUCKY: 13. Yes. I will make  
25 this easy for you, Mr. Pajor.

1 BY MR. STUCKY:

2 Q. If you flip to Volume I to Exhibit 18, I will  
3 make it easy for you.

4 MR. STUCKY: And just for clarity  
5 purposes, I would like to mark GMD Exhibit 18.  
6 I know it's a duplicate but so we could have a  
7 clean set.

8 (GMD Exhibit 18 was marked for  
9 identification by the Reporter.)

10 MR. STUCKY: I would like to, and it's  
11 a duplicate copy, but I would like to offer GMD  
12 18 in to evidence.

13 MR. McLEOD: No objection.

14 MR. OLEEN: No objection, but a  
15 request. Mr. Stucky, please help me with my  
16 disorganization. Which one?

17 MR. STUCKY: Do you have the exhibit  
18 notebooks that were furnished to you by the  
19 District?

20 MR. OLEEN: Yes, I do.

21 MR. STUCKY: Volume I, Number 18.

22 MR. OLEEN: And you asked that it be  
23 marked 18?

24 MR. STUCKY: Yes, I will mark them all  
25 eventually.

1 THE HEARING OFFICER: So as I  
2 understand it, Mr. Stucky, GMD 18 is the same as  
3 City 13?

4 MR. STUCKY: That's correct. I am  
5 doing it for convenience.

6 THE HEARING OFFICER: GMD 18 will be  
7 admitted.

8 BY MR. STUCKY:

9 Q. I ask that you flip to interrogatory number 19  
10 in that document. And again, you can flip to  
11 either GMD Exhibit 18 or the City's Exhibit 13.  
12 Either one.

13 A. Okay. I am there.

14 Q. Now, if you look with me and read with me at the  
15 bottom of that page, it says: Further, DWR  
16 staff has not proposed multiyear flex accounts  
17 as an alternative, and have advised that they  
18 would not consider such accounts a viable  
19 alternative due to health and safety concerns.  
20 End quote. Would you agree I have accurately  
21 read that sentence?

22 A. Yes, sir, you have.

23 Q. Would you agree that it at least implies someone  
24 from the Division of Water Resources advised the  
25 City that multiyear flex accounts were not the

1 best solution? Would you agree with that  
2 statement?

3 A. Yes, sir, I would.

4 Q. Were you part of these discussions?

5 A. I do not recall having had discussions on this  
6 subject with any DWR staff. I do recall having  
7 discussions on the subject with city staff and  
8 our consultants regarding discussions with DWR  
9 regarding this.

10 Q. Okay. Do you have any knowledge then, as you  
11 are sitting here today, who on the DWR staff  
12 advised you that multiyear flex accounts were  
13 not a viable alternative?

14 A. I do not.

15 Q. Do you have any knowledge of who with the City  
16 may be able to answer that question?

17 A. Not from my knowledge.

18 Q. Now, just a little bit ago with respect to  
19 multiyear flex accounts, on Number 1 it was  
20 stated, multiyear flex accounts require term  
21 permits to be issued to replace the base water  
22 rights during suspension; therefore, all  
23 pumping, including the quantity under 40,000  
24 acre feet, would be junior to most surrounding  
25 rights. Do you see where in that response I was

1 reading?

2 A. Yes, I do.

3 Q. And, in fact, there was a discussion that the  
4 City was concerned that if a multiyear flex  
5 account was used, their 40,000 acre feet would  
6 suddenly become junior and would no longer have  
7 a senior priority. Is that what their concern  
8 is?

9 A. Yes, it is.

10 Q. I would ask that you --

11 MR. STUCKY: May I approach the  
12 witness?

13 THE HEARING OFFICER: Yes.

14 BY MR. STUCKY:

15 Q. I would ask that you flip to Exhibit Number 22  
16 in Volume II. Would you agree that those are  
17 the rules and regulations of the Kansas Water  
18 Appropriation Act?

19 A. Yes. Is this it in its entirety?

20 Q. Yes, it is.

21 A. No wonder your notebooks are so thick.

22 MR. STUCKY: I know that we have taken  
23 judicial notice of these rules and regulations,  
24 but I would like to go ahead and mark this as  
25 GMD's Exhibit 22.



1 (GMD Exhibit 22 was marked for  
2 identification by the Reporter.)

3 MR. STUCKY: I can't imagine there will  
4 be a dispute in this regard, since you've  
5 already taken judicial notice, but I would like  
6 to admit this in to evidence.

7 THE HEARING OFFICER: Any objection?

8 MR. OLEEN: Not an objection, Madame  
9 Officer, I presume that these are all the most  
10 updated DWR regs. I agree it could, well, to  
11 the extent qualified people are going to talk  
12 about laws, it could be helpful for us to all  
13 have a set to look at. I don't know if this is  
14 the full set, I don't know if this is an updated  
15 set. Just so we are not bound to this Exhibit  
16 22 being the actual laws and that to the extent  
17 you, Madame Officer, will be referring to laws  
18 you won't just be referring to what's here,  
19 because I don't know what is actually here.

20 MR. STUCKY: If I could respond to that  
21 very briefly. Yesterday a lot of exhibits were  
22 admitted as official government documents. This  
23 was printed directly off the Water Resources'  
24 website just shortly before this hearing, for  
25 what it's worth.

1 THE HEARING OFFICER: To the extent  
2 that anything in this exhibit is not consistent  
3 with current statute and regulation, then I will  
4 rely on the current statute and regulation.

5 MR. OLEEN: Thank you. That dissuades  
6 my concern.

7 BY MR. STUCKY:

8 Q. I want to clarify the record because you  
9 testified to an aspect in that interrogatory.  
10 If we were to flip to K.A.R. 5-16-7 on Page 161  
11 of that document.

12 THE HEARING OFFICER: I am sorry, could  
13 you repeat that page number?

14 MR. STUCKY: Page 161.

15 BY MR. STUCKY:

16 Q. If I were to tell you that pursuant to a  
17 multiyear flex account, native senior water  
18 rights are protected, would you have reason to  
19 disagree with me, if I were to characterize that  
20 regulation in that fashion? Would you have  
21 reason to disagree with me, if I were to  
22 characterize it as saying that the quantity  
23 authorized with respect to a senior native water  
24 right is protected, would you disagree with that  
25 characterization?

1 A. No.

2 MR. McLEOD: Madame Hearing Officer, I  
3 think we are again, we are getting in to an area  
4 where counsel is asking the witness to make  
5 interpretations of laws and regs, and maybe such  
6 an argument would be properly relegated to the  
7 post hearing briefs where legal arguments are  
8 normally made, rather than in the evidence.

9 MR. STUCKY: If I could respond, just a  
10 moment ago he testified to the exact opposite  
11 and what this regulation says, is that any  
12 existing water right that is put in to a  
13 multiyear flex account, that quantity is  
14 protected, and that water right is protected.  
15 And in this interrogatory was read into the  
16 record, which states something different. So  
17 because it was read into the record the witness  
18 testified to something different. So I think it  
19 is a fair question in that regard.

20 THE HEARING OFFICER: I think since the  
21 witness opened the door to that, that allows  
22 questioning on that. If that's a criteria on  
23 which a decision was made, I think exploring  
24 that criteria is fair.

25 MR. McLEOD: I would make the further

1 point that the witness read it into the record  
2 because it is in the interrogatory response.  
3 And essentially what counsel is doing is legally  
4 arguing with the interrogatory response by going  
5 through this set of steps. And again, that  
6 would be more appropriately done in post hearing  
7 briefs than in the evidence.

8 THE HEARING OFFICER: Perhaps so, but  
9 the interrogatory response, as I understand it,  
10 was created by the witness.

11 MR. McLEOD: Mr. Pajor, I think signed  
12 the interrogatories. I don't think there has  
13 been any voir dire as to whether the analysis in  
14 that response was actually created by Mr. Pajor.

15 MR. STUCKY: Well, let me ask this.

16 BY MR. STUCKY:

17 Q. Mr. Pajor, before you signed those interrogatory  
18 responses did you review them?

19 A. Yes.

20 Q. And so when you signed that interrogatory and  
21 affirmed that everything in those  
22 interrogatories was true and correct, when you  
23 placed your signature on that, one could assume  
24 you would have read it, correct?

25 A. Yes.

1 Q. So to back up, if we were to ask you about your  
2 answer to interrogatory number 19, would you at  
3 least agree with me now, that Number 1, bulleted  
4 point Number 1, in that response, is incorrect?

5 A. That appears to be the case.

6 Q. Okay. I am just going to ask one question about  
7 the proposal. Is there any knowledge that you  
8 have about whether or not, as far as a permit  
9 condition, that some sort of requirement for  
10 rotational pumping would occur? In other words,  
11 the City would withdraw its aquifer maintenance  
12 credits in a rotational fashion.

13 In other words, at one point they  
14 recover some of the credits from one part of the  
15 well field, and at another time recover some of  
16 credits from a different part of the well field,  
17 and the reason for doing that is to better  
18 protect the aquifer. Do you recall that being a  
19 proposed permit condition?

20 A. I call it in discussion, I don't know whether it  
21 is in the proposed permit condition or not. It  
22 seems reasonable that it would be.

23 Q. Do you think it would be a reasonable permit  
24 that if the City were to use an aquifer  
25 maintenance credit, that the amount of water

1           that could be taken to town at a later time  
2           would be reduced? Do you think that would be a  
3           reasonable requirement?

4   A.   Reduced to what? For what? Why? How?

5   Q.   Well, we'll strike that question actually.  
6       We'll withdraw it.

7                    You were asked some questions about  
8           seepage and accounting by Mr. McLeod a few  
9           moments ago. And the City has provided some  
10          percentages as far as what that seepage could  
11          look like. Are you prepared or qualified to  
12          testify on that subject?

13   A.   Not in my opinion.

14   Q.   Okay. I will move on.

15                    You were asked a question a little bit  
16           ago about 19,000 acre feet that could be pumped  
17           under the existing permits pursuant to ASR Phase  
18           II. Do you recall that question?

19   A.   Yes, I do.

20   Q.   Just to clarify the record, the 19,000 acre  
21          feet, that would be an annual requirement; is  
22          that correct? An annual quantity; is that  
23          correct?

24   A.   Yes.

25   Q.   You were also asked some questions by Mr. McLeod

1 about whether or not lowering the index level  
2 would be a benefit to the aquifer. And I think  
3 your answer was yes in that regard. My question  
4 is, would you agree that when an aquifer  
5 maintenance credit, when those credits are used,  
6 would the water in the aquifer potentially be  
7 drawn down to a lower level than it could be  
8 drawn down today by the City, pursuant to the  
9 physical recharge credits?

10 A. Yes. But only about once every 100 years.

11 Q. Okay. Aha, that gets --

12 A. Aha.

13 Q. That gets me back to my prior question.

14 A. Aha.

15 Q. That gets me back to my prior question. So in  
16 your estimation, the aquifer maintenance credits  
17 would be used and withdrawn essentially once  
18 every 100 years; is that correct?

19 A. You betcha, you got me. Let's move on.

20 Q. So with respect to that, is it true that if  
21 50,000 acre feet of aquifer maintenance credits  
22 would be needed once every 100 years to utilize  
23 the entire 120,000 acre feet of aquifer  
24 maintenance credits, which is the cap, from a  
25 mathematical perspective would it take

1 approximately 240 years to use that 120,000 acre  
2 feet?

3 A. Yes. And isn't that a benefit to the aquifer?

4 MR. STUCKY: No further questions.

5

6 RE CROSS EXAMINATION

7 BY MS. WENDLING:

8 Q. Earlier this morning I believe you testified  
9 that it would take a long time for the levels to  
10 be drawn down enough by the City to earn  
11 physical recharge credits without this proposal.  
12 That's when you were talking about the aquifer  
13 depleting aside from the City's pumping?

14 A. Yes.

15 Q. Have you been able to quantify what a long time  
16 is?

17 A. That has, estimates have been made, I do not  
18 know the answer to the question what is that  
19 amount, I don't have that with me.

20 Q. So do you, to your knowledge has the City  
21 modeled how long it would take the aquifer to  
22 draw down to a level where physical recharge  
23 credits could be accumulated?

24 A. I don't know that we have modeled it, I know we  
25 have estimated it.



1 Q. Do you know who would have that estimated  
2 amount?

3 A. I am not sure who would have that information.

4 Q. Earlier Mr. McLeod had tried to clarify some of  
5 my questions between lowering the minimum index  
6 level, and lowering the aquifer level, actual  
7 water in the aquifer. And yesterday you had  
8 testified that a potential detriment to lowered  
9 aquifer water levels is the chloride plume  
10 coming from Burrton. Do you still stand by that  
11 testimony from yesterday?

12 A. Yes.

13 Q. And on our favorite subject this morning of  
14 AMCs, you have described that as earning a  
15 credit for water left in the aquifer; is that  
16 correct?

17 A. Yes, I have.

18 Q. Is it your belief that anyone who leaves water  
19 in the aquifer should similarly obtain such a  
20 credit?

21 A. No, it is not.

22 Q. And why should the City earn a credit for water  
23 left, if not others?

24 A. If another water rights user can meet the water  
25 demand that they have from a source other than

1 the aquifer and leave a credit of water in the  
2 aquifer, then the argument is parallel. If they  
3 cannot, it is not.

4 Q. If the City is able to have this proposal  
5 approved for AMCs and a lower index level, is  
6 further development of the ASR project  
7 necessary?

8 A. Future developments of the ASR will be made,  
9 based on future decisions. I cannot, I cannot  
10 predict whether or not there would be additional  
11 development.

12 Q. Okay. You had previously talked about Mr.  
13 Barfield's color characterization for the ASR  
14 project, and I believe it was something like  
15 water in the aquifer is red and physical  
16 recharge credits are blue. Is that your  
17 recollection as well?

18 A. I don't know that I used the colors, because I  
19 have never liked those two particular colors to  
20 be picked; but, yes, I did talk about different  
21 colors. I characterized it this morning as  
22 relabeling.

23 Q. If we were to build on Mr. Barfield's example,  
24 using any colors you like, what colors would you  
25 use for the aquifer, physical recharge and AMC

1 credit?

2 A. I am fine with any colors. Let's stay with blue  
3 and red, that is fine. We'll turn it from blue  
4 water to red water.

5 Q. So you are changing the color of the water?

6 A. Right. In aquifer maintenance credits, that's  
7 what we are doing.

8 Q. Okay. And that's consistent with your theory of  
9 relabeling?

10 A. As opposed to putting in a red unit of water, we  
11 are changing a color.

12 Q. All right. And I believe you said earlier that  
13 it would not be economical for the City to use  
14 the recharge credits, other than during a  
15 drought; is that correct?

16 A. Correct.

17 Q. And the City intends to use the credits in order  
18 to meet customer demands or customer needs  
19 during a drought; is that correct?

20 A. Correct.

21 Q. When you used the term customer need or customer  
22 demand, does that include customers outside of  
23 the City of Wichita?

24 A. Yes.

25 Q. Is the City required to take on customers

1 outside of the City of Wichita?

2 A. To my knowledge the City is not required to take  
3 on customers at all.

4 Q. So it is the City's decision to take on these  
5 customers outside of the city?

6 A. It's the City's -- the City has to agree to it.

7 Q. Okay. Does the City generally have contracts  
8 with their water customers?

9 A. We generally have contracts with our wholesale  
10 customers, not with our retail customers.

11 Q. For your wholesale customers, do you guarantee  
12 them water availability during a 1% drought?

13 A. First of all, there is a dozen different  
14 contracts, they are not all the same. And I  
15 could not speak from my knowledge of those  
16 contracts at the moment what, if any, language  
17 there is relative to guarantee of water supply.

18 Q. Okay. When, well, are you involved in  
19 considering whether to take on new wholesale  
20 customers?

21 A. Yes.

22 Q. And do you consider the City's ability to meet  
23 those water demands prior to taking on such new  
24 customers?

25 A. Yes.

1 Q. And have you modeled, prior to taking on  
2 customers, the ability to provide their water  
3 needs in the event of a 1% drought?

4 A. Prior to taking them on?

5 Q. Correct.

6 A. Once we take them on, they are in our base, and  
7 every time we model we model them in our base.

8 Q. When was the first time you modeled the ability  
9 of the City to meet demand during a 1% drought?

10 A. I can't say specifically, but in the last couple  
11 of years. I can tell you we haven't taken on  
12 any wholesale customers since we did that  
13 modeling. So we haven't gotten to that point  
14 yet. But we would put that new customer in to  
15 our base to evaluate it.

16 MS. WENDLING: No further questions.

17 THE HEARING OFFICER: Mr. McLeod,  
18 anything else or can we excuse or witness?

19 MR. MCLEOD: I have just a very, very,  
20 few redirect clean ups.

21

22 FURTHER REDIRECT EXAMINATION

23 BY MR. MCLEOD:

24 Q. Mr. Pajor, all the back and forth on the  
25 aquifer, the City's base water rights 40,000

1 acre feet per year, is there a temporal element  
2 to those water rights?

3 A. Yes.

4 Q. And if the City, if the City goes from year one  
5 to year two and only draws ten acre feet, under  
6 its 40,000 acre feet rights, what happens to the  
7 rest of it when the year closes out?

8 A. The authorization to remove that water is lost.

9 Q. For that year?

10 A. Yes.

11 Q. So the City has foregone the percentage of its  
12 right not drawn for the year for which it did  
13 not draw it?

14 A. Yes.

15 Q. And that water has remained in the aquifer as a  
16 consequence?

17 A. Yes.

18 Q. Is that why, is that the explanation of how we  
19 can have an aquifer that is so over  
20 appropriated, and yet that aquifer is full?

21 A. Yes.

22 Q. Looking back to the May 22nd, 2018, letter from  
23 Alan King to David Barfield, if that is still  
24 before you. I believe Mr. Stucky asked you if  
25 that was an official statement of the City and

1           you indicated that it was.

2       A.    Yes.  It's not before me, but, yes.  I mean,  
3           everything is before me.

4       Q.    If you would take a moment and see if you can  
5           locate that letter in the exhibit books.  And  
6           you might look for a copy in the proposed  
7           correspondence tab in the City's black binder.  
8           You might go back about 121 pages in that  
9           material.

10      A.    I have it.  Thank you.

11      Q.    In that same letter, if you flip back to the  
12           next to the last page, which is numbered in the  
13           notebook 126, what was Alan King addressing  
14           there, in paragraph 14, for something that might  
15           be a permit condition?

16      A.    (Witness reviews documents).

17      Q.    In paragraph 14 next to the last page?

18      A.    Yes.

19      Q.    What does Mr. King express there in things the  
20           City is agreeable to?

21      A.    He is expressing the fact that the City is  
22           agreeing to an operating principle that native  
23           rights should be utilized prior to recharge  
24           credits being utilized.

25      Q.    So although it is, as you suggested not in the

1 ASR Phase II permit, and not in the chief  
2 engineer's draft proposed conditions, in this  
3 exchange of correspondence Mr. King was saying  
4 the City is agreeable to the condition; is that  
5 right?

6 A. That is correct. And I would reiterate that.

7 MR. McLEOD: Nothing further for the  
8 witness.

9 THE HEARING OFFICER: Mr. Oleen.

10 MR. OLEEN: No questions.

11 THE HEARING OFFICER: Mr. Stucky.

12 MR. STUCKY: I will keep my questions  
13 directly in line with those questions.

14 THE HEARING OFFICER: Thank you.

15

16 FURTHER RECROSS EXAMINATION

17 BY MR. STUCKY:

18 Q. First of all, with respect to that last comment  
19 that you indicated that the City has agreed that  
20 the operating principle that native water rights  
21 should be utilized prior to recharge credits.  
22 You have indicated that is, in fact, a condition  
23 the City would agree to. The City reviewed the  
24 draft order that is represented as DWR Exhibit  
25 1. Is that correct?



1 A. Yes.

2 Q. And red line changes were made to that document;  
3 is that correct?

4 A. I have a recollection of that, not the  
5 particulars, but, yes.

6 Q. Why didn't the City add in that to the order, if  
7 that was something the City thought should be  
8 part of the order? Or propose that to DWR at  
9 that time?

10 A. Sorry, I thought there was another attorney  
11 popping up. I don't know. Doesn't seem to make  
12 any sense to me as of this morning. I would be  
13 happy to put it in today.

14 Q. I would ask that you flip that you find the  
15 District's exhibit notebook Volume III.

16 A. (Witness reviews documents).

17 MR. STUCKY: And just to speed this up,  
18 can I ask my esteemed colleague with two arms to  
19 approach the witness and help find the  
20 documents?

21 THE HEARING OFFICER: That's fine.

22 MR. STUCKY: Exhibit 43 Page 61, maybe.

23 MR. McLEOD: Madame Hearing Officer,  
24 for the record, at this moment I would like to  
25 point out that the District is represented here

1           today by two enabled and licensed Kansas  
2           attorneys, and when a representative of the  
3           District need to approach the witness or  
4           communicate with the Hearing Officer, for  
5           purposes of compliance of Kansas law, I suggest  
6           that that be done by those licensed attorneys.

7                         MR. STUCKY: I am only half an  
8           attorney, I only have one arm.

9                         THE HEARING OFFICER: I think in the  
10          interest of time if we could have another set of  
11          arms helping Mr. Stucky, we'll do it. But  
12          generally, yes, I agree with you.

13                        (GMD Exhibit 43 was marked for  
14                        identification by the Reporter.)

15          BY MR. STUCKY:

16          Q.       So we are on Page 61 of Exhibit 43. And there  
17                    should be a map on Page 61 of Exhibit 43. Do  
18                    you see that map?

19          A.       Yes, sir, I do.

20          Q.       And if I were to tell you that that's an  
21                    official map that was generated by the KU Kansas  
22                    Geological Survey at the University of Kansas  
23                    and you see that notation on the map, would you  
24                    have reason to disagree with me?

25          A.       I would not.

1 Q. And if I were to tell you that's an official  
2 government document, would you have reason to  
3 disagree with me?

4 A. I would not.

5 Q. And if we were to flip to the very first, while  
6 still holding your thumb on Page 61, if you were  
7 able to flip to the first page, you would see  
8 that it's an Equus Beds Groundwater Management  
9 District Number 2 sustainability assessment that  
10 was completed by JJ Butler, Junior, Whitmore,  
11 Wilson with the Kansas Geological Survey; is  
12 that correct?

13 A. That is correct.

14 Q. So, in fact, it's an official government  
15 document?

16 A. Still is.

17 Q. Yes.

18 MR. STUCKY: I would move to admit the  
19 District's Exhibit Number 43 in to evidence.

20 THE HEARING OFFICER: Any objection?

21 MR. McLEOD: No objection.

22 THE HEARING OFFICER: GMD Exhibit 43  
23 will be admitted.

24 (GMD Exhibit 43 was marked for  
25 identification by the Reporter.)

1 BY MR. STUCKY:

2 Q. Just a moment ago Mr. McLeod asked you questions  
3 about the fact that if the City doesn't use its  
4 40,000 acre feet of native water rights in an  
5 existing year those, that water really goes  
6 away, was that the line of questioning?

7 A. No.

8 Q. Can you characterize the answer you provided in  
9 that.

10 A. Yes. Our right to withdraw that water goes away  
11 with the calendar year.

12 Q. But you would have that right to withdraw to the  
13 next year; is that correct?

14 A. We would have a different right the next year,  
15 right.

16 Q. So the right, what we are referring to is the  
17 right to withdraw the remainder of that 40,000  
18 acre feet goes away at the end of that calendar  
19 year, is that the testimony?

20 A. I better change to correct. Yes, correct.

21 Q. If we were to flip now to Page 61, and I guess I  
22 will just ask this in a very general sense,  
23 would you agree, from your time serving on the  
24 GMD Board, would you agree that other water  
25 right holders in the Equus Beds aquifer that

1           have water rights within the City's well field,  
2           would you agree that many of those users have  
3           also not used their entire authorized quantity  
4           of water in a given year?

5           A.    Absolutely.

6           Q.    And if I were just to tell you that if we look  
7           at Page 61, what this shows in red, the red  
8           number, if I were to tell you that that is the  
9           authorized quantity of water, oh, in a township,  
10          if I were to tell you the red is the authorized  
11          quantity in a township, would you have reason to  
12          disagree with me?

13          A.    I would not.

14          Q.    And if I were to tell you that the middle number  
15          is the amount of water that was actually used in  
16          a particular township, would you have a reason  
17          to disagree with me?

18          A.    I would not.

19          Q.    And would you also agree then that, if we were  
20          to scan through these numbers, almost, I believe  
21          actually every one of them, the amount actually  
22          used was less than the authorized quantity,  
23          would you agree with that?

24          A.    Yes.

25          Q.    And so, in other words, other users of the

1 District are also not using their entire  
2 authorized quantity; is that correct?

3 A. Still the case. It was a minute ago, too.

4 Q. Yet these other users of the District they are  
5 not getting a benefit for being good stewards of  
6 the aquifer; is that correct, in the sense that  
7 they are getting to divert to some sort of  
8 credit later? Would that be a true statement?

9 A. And they are not bringing water to the game.  
10 You have to take your water bottle, put it in  
11 their center pivot to save bringing water up of  
12 a water bottle from their center pivot to be  
13 able to move the water from one period to  
14 another year. What you are missing is the water  
15 bottle.

16 Q. Okay. I, and again, we are going to disagree on  
17 this point. I believe to me you just described  
18 a nature of a physical recharge credit. I am  
19 just asking a very simple question. If the  
20 irrigators in this room choose not to use all of  
21 their water, and they leave that water in the  
22 aquifer, are they able to then get a credit for  
23 that water they have left in the aquifer?

24 That's my question. That's the only question I  
25 am asking.

1 A. So the editorial part where you mischaracterized  
2 my mischaracterization I don't respond to?

3 Okay. What is your question?

4 Q. The question is, if the irrigators in the room  
5 leave water in the aquifer, they don't use their  
6 entire authorized quantity in a given year,  
7 should they receive a credit for having left  
8 that water in the aquifer?

9 A. No water rights holder should. Neither the City  
10 of Wichita nor others.

11 MR. STUCKY: No further questions.

12 THE HEARING OFFICER: Do you have any  
13 questions?

14 MS. WENDLING: No.

15 THE HEARING OFFICER: It appears that  
16 we are finished with Mr. Pajor. Thank you.  
17 Thank you for your cooperation. It is 11:35. I  
18 think I am going to suggest an early lunch  
19 break, unless anyone has a different suggestion.  
20 Okay. Hearing none, it's 11:35, let's return at  
21 12:45. We are now off the record.

22 (REPORTER'S NOTE: At this time,  
23 11:34 a.m., a lunch recess was taken, after  
24 which, 12:46 p.m., the following proceedings  
25 were held:)

1 THE HEARING OFFICER: We are back on  
2 the record after a lunch break. It's about  
3 12:45 and as I understand it, the Groundwater  
4 Management District is going to present one of  
5 their witnesses, who is only here today, so the  
6 other parties have agreed to take this witness  
7 out of sequence; is that right, Mr. Adrian?

8 MR. ADRIAN: That's correct, Your  
9 Honor. I call Masih Akhbari.

10 MASIH AKHBARI, PHD, PE,  
11 was thereupon called as a witness herein, and  
12 after having first been duly sworn to testify to  
13 the truth, the whole truth and nothing but the  
14 truth, was examined and testified as follows:

15  
16 DIRECT EXAMINATION

17 BY MR. ADRIAN:

18 Q. Please state your full name and address.

19 A. Masih Akhbari, my address is 529 Washington  
20 Avenue, Santa Monica, California 90403.

21 Q. What is your occupation?

22 A. I am a project engineer to Larry Walker  
23 Associates, and I recently founded a company  
24 called Global Water Resources Solutions,  
25 Incorporated.



1 Q. What graduate degrees do you hold?

2 A. I have a master's degree in environmental  
3 engineering and a Ph.D. in water resources  
4 management.

5 Q. And where did you earn your master's degree?

6 A. I received my masters from Amirkabir University  
7 of Technology and my Ph.D. from Colorado State  
8 University.

9 Q. Would you describe your professional experience.

10 A. I have been working on a wide variety of areas  
11 in water resources management, in both surface  
12 and groundwater. And reservoir river  
13 groundwater. And I have also coauthored a  
14 textbook on groundwater.

15 Q. I was going to ask you about that, have you  
16 authored other publications?

17 A. Yes. Aside from the textbook which is titled,  
18 Groundwater Hydrology Engineering Planning &  
19 Management, I have also authored over ten  
20 scientific papers, multiple technical reports  
21 and some other types of reports for memorandums  
22 that were in California.

23 Q. I assume you have given some talks and  
24 presentations on hydrology and water management?

25 A. I have. Yes. I have given multiple talks and

1 presentations either as an invited speaker or as  
2 the lecturer or I have submitted abstracts and  
3 given presentations. And I have also served as  
4 a chair of the American Geophysical University.

5 Q. Do you have teaching experience in civil  
6 engineering or water management?

7 A. Yes. I have been a teaching assistant and I  
8 have also co facilitated in disciplinary courses  
9 on water biology.

10 Q. Please describe your skills with regard to your  
11 experience, and more specifically in water  
12 management modeling.

13 A. So I have worked on so many different types of  
14 models, from writing the source codes or  
15 modifying source codes or using already existing  
16 platforms to build new models and linking  
17 different models together. So I have almost 15  
18 years of experience working with computers,  
19 water resources simulation models.

20 Q. How did you come to be here today?

21 A. I was asked by yourself to corroborate with you  
22 and I was given this task to review the  
23 documents associated with a groundwater flow  
24 model, and more specifically the USGS report,  
25 review the model itself, its performance and the

1 City's proposal to modify the ASR.

2 Q. Did you do that?

3 A. I did.

4 Q. Would you describe for those of us present what  
5 was entailed in your examination?

6 A. I did start my examination with reviewing the  
7 USGS report to learn how they have structured  
8 the model, the inputs they have used, the  
9 calibration process they have employed and also  
10 learned the model. And then continued with  
11 running the models, running other scenarios by  
12 updating initial heads in the model and also  
13 reviewing the City's proposal to evaluate the  
14 suitability of the USGS model to be applied in  
15 order to specified groundwater model levels.

16 Q. I understand that the USGS model was modified to  
17 some extent by the City?

18 A. Yes. Yes, I used the Burns & McDonnell that was  
19 modified.

20 Q. What conclusions did you draw from that review  
21 of the model?

22 A. Well, the model is a very good tool for basing  
23 skills planning. In other words, if you are  
24 going to make decisions on the total amount of,  
25 total volume of water that can be extracted from

1 the basin in a year, that could be used; but to  
2 use the model to specify water levels at the  
3 locations of specific wells, the model does not  
4 have that capability.

5 Q. I want to go back a moment, if you will open  
6 Volume V that is in front of you, and turn to  
7 what are marked as Exhibits 64, 65 and 66.

8 A. Which part?

9 Q. 64, 65 and 66. Start with 64.

10 A. Yes.

11 Q. What is that?

12 A. This is the expert report that I provided.

13 Q. The written report by you?

14 A. Yes.

15 Q. And what is, turn to 65 then and tell us what  
16 that is.

17 A. These are the simulated versus observed data  
18 that was referred to in one of the tables in the  
19 USGS report. It's on Page 89 of the report.  
20 And the link is available on that page, so I  
21 downloaded the data using that list. Which is  
22 similar to this time series, and in order to do  
23 my analysis and evaluate the performance of the  
24 modeling in comparison with the observed data.

25 Q. And then turn to tab 66.

1 A. Yes.

2 Q. And identify that, please.

3 A. This is a remodel letter that I wrote in  
4 response to one of the City's experts that had  
5 provided some feedback, or critiques, on my  
6 expert reports. And I provided what Luca  
7 DeAngelis, or what my rebuttal is.

8 MR. ADRIAN: I would like for those to  
9 be marked and admitted, permission of counsel.

10 THE HEARING OFFICER: Any objections?

11 MR. McLEOD: Just to the expert report  
12 itself as cumulative, because the witness will  
13 cover those issues in live testimony.

14 THE HEARING OFFICER: I think it would  
15 be helpful for me to have it, so I will allow it  
16 in. GMD Exhibits 64, 65 and 66 will be  
17 admitted.

18 (GMD Exhibits 64, 65 and 66 were marked  
19 for identification by the Reporter.)

20 BY MR. ADRIAN:

21 Q. Dr. Akhbari, the modeling that was done by the  
22 City used statistics or numbers from the basin  
23 in 1998. And I assume you looked at those and  
24 you also, as I understand, used figures from the  
25 year 2001?

1 A. Yes.

2 Q. Why did you do that?

3 A. Well, the 1998 data were model outputs from the  
4 model, they were simulated data. And later on  
5 in my analysis I could confirm the model mainly  
6 underestimates the groundwater levels. And 2001  
7 is the beginning of the year where observed data  
8 were starting to be acquired. And I used  
9 observed data to set initial heads at the  
10 levels, at the, or across the basin. And I ran  
11 them while observing the observed data and  
12 compared the two outputs to make sure that the  
13 model responds well. Overall, across the 38  
14 index wells, on average the 2001 water levels  
15 were 11.85 feet higher than 1998. And I wanted  
16 to, or see if the model responds correctly to  
17 those higher water levels. And I could confirm  
18 that.

19 Q. So by using the 2001 figures and starting with  
20 observed data what you came to was a more  
21 precise model output; is that correct?

22 A. More reliable outputs because they are observed  
23 data, as opposed to simulated data.

24 Q. You had an opportunity, did you not, to also  
25 examine the entirety of the proposal that the

1 City is putting forward today, did you not?

2 A. I reviewed the proposal.

3 Q. When you and I were talking about the use of  
4 this model for purposes of establishing index  
5 wells, you used an example of I think the  
6 temperature. The program model, as it is used,  
7 does a good job of figuring water levels over  
8 the total of the scope of the model, but not  
9 good for measuring individual wells; is that  
10 correct?

11 A. Correct, yes. And the example was, again for an  
12 example, if you are going to evaluate, or if a  
13 specific setting in the U.S. reaches freezing  
14 point, and you take, for example, the first of  
15 February, if you take the average air  
16 temperature across the U.S. and come up with a  
17 value that is like, for example, 35 degrees,  
18 plus minus two degrees of error, could we apply  
19 that average both to Chicago and San Diego?  
20 Obviously not. So the model, the statistics  
21 expert's USGS come to compare the performance of  
22 the model is root versus square, which takes the  
23 average of errors across the entire basin. And  
24 obviously that average is not applicable to the  
25 location of the specific draws.

1                   And what I did in my analysis is I  
2                   again downloaded the simulated versus observed  
3                   data, and compared those at the location of each  
4                   specific index low. And with that comparison,  
5                   obviously that comparison is more reliable  
6                   because then again it does compare apples to  
7                   apples. And with that comparison I concluded  
8                   that on average there is about 30 percent of  
9                   error at the location of each index level. And  
10                  that could be as high as even 68 percent of  
11                  error. And that's why that is one of the  
12                  reasons that I believe this model at its current  
13                  status cannot be used to set groundwater  
14                  elevations at individual wells.

15    Q.    And would you look at your report at figure 4  
16           and table 3 and explain that to us. That's at  
17           the end of your report.

18                   THE REPORTER: I need to fix my file on  
19                   the computer for a minute.

20                           (A short off-the-record discussion  
21                           was held at this time.)

22    A.    So I am going to start with figure 4 on Page 26  
23           of my report. Which is a copy of figure 40 of  
24           the USGS report. The graphs in this figure  
25           compare observed versus simulated results at the



1 location of monitoring results, about 20  
2 monitoring results. Even with a visual  
3 comparison we can see that the blue graphs, that  
4 show the simulated results, are mainly  
5 underestimating elevations, in comparison with  
6 the red graphs that show the observed values.

7 So, however, we cannot just rely on the  
8 visual comparisons, so I downloaded the data  
9 that I mentioned, which is included in Exhibit  
10 65 from table, the table on Page 89 of the USGS  
11 report. And table 3 on my report, on Page 17,  
12 provides a summary of that comparison. So  
13 column A shows the monitoring well number,  
14 column B shows the observation period. And  
15 column C shows the difference between minimum  
16 and maximum observed values over the observation  
17 period.

18 For example, let's choose well number  
19 741, the observation period is from 1952 through  
20 2008. So over this 50, about 50 years, the  
21 total difference between minimum and maximum  
22 water level observations has been 8.21 feet.  
23 Column D shows the maximum difference between  
24 observed versus simulated values. For the same  
25 well, the maximum difference is 4.95 feet. So

1 when we, and also column A shows the average of  
2 those differences, which is 3.03 feet  
3 difference.

4 So for this well, the maximum  
5 difference between observed versus simulated  
6 values is 60 percent of the total range of water  
7 level fluctuations over the past 50 years. And  
8 on average 37 percent. And this well, as shown  
9 in column H, is mainly underestimating  
10 groundwater levels.

11 So again, this process can be repeated  
12 for all wells. Out of the 20 wells, 12 of them,  
13 which are corresponding to 60 percent of these  
14 wells, are underestimating groundwater levels in  
15 the simulated results, and that was my  
16 conclusion from this table.

17 Q. So what I am hearing you say is that there is a  
18 variation from accuracy of around 60 percent to  
19 a range of low of 37 percent in those examples?

20 A. Yes.

21 Q. Also now would you momentarily turn in front of  
22 you, I have opened the proposal.

23 A. Yes.

24 Q. And I think it is City Exhibit 1, I believe.

25 And there is a map that's in front of you. What

1 page is that?

2 A. Page 217.

3 Q. Would you describe for those present what you  
4 were telling me earlier about the significance  
5 of those various areas, one to the east and the  
6 other to the west.

7 A. Of course. So let me get to the right page on  
8 my report as well. So I am going to use this  
9 figure on the City's proposal as a reference and  
10 refer also to figure 2 on Page 23. So of my  
11 expert report.

12 Q. Page 23.

13 A. So on Page 23 of my report, the blue graphs show  
14 model results from 1998 initial heads, basically  
15 the model that has been used to set the proposed  
16 levels. And the red graphs show the updated  
17 model results that have been, that the model has  
18 been modified using 2001 initial heads. Well  
19 number 23 is on the east side of the basin of  
20 this entity of the Little Arkansas River. And  
21 well number 24 is on the west side. So when we  
22 compared the two graphs for these wells, we see  
23 a very sharp drop in water elevation from the  
24 first stress period to the second one. Again,  
25 the only parameter that has been updated in the

1 model has been initial heads. This drop does  
2 make sense because water levels in the Little  
3 Arkansas River has probably been lower, and that  
4 causes, the model tries to balance out the  
5 groundwater versus the surface water levels.

6 So this confirms how sensitive the  
7 model is to water levels, especially in the east  
8 side, where the Little Arkansas River is. On  
9 the west side we see the updated and higher  
10 initial heads have followed the right trend and  
11 we do not see such drops, such large drop  
12 between the two elevations.

13 Q. How does this relate to the sensitivity of the  
14 program of the model, how does that relate to  
15 setting index levels in the wells?

16 A. So again, the especially the wells that are  
17 located on the east side, are very sensitive to  
18 the surface water levels. And an accurate  
19 introduction of those levels to the model is  
20 very vital, otherwise the model for sure is  
21 going to return inaccurate values.

22 And another thing that I evaluated,  
23 again it's slightly irrelevant to what you just  
24 asked, but since we already have this map in  
25 front of us, is the fact that 1998 elevations

1           were simulated results. Again, those simulated  
2           results do tend to underestimate water level  
3           evaluations. So the updated model with the 2001  
4           results I am going to refer to table 1 in my  
5           report. And also table 4. So table 4 on Page  
6           18 is a copy of table 210 of the City's  
7           modification proposal and it shows the index  
8           values that have used existing elevations versus  
9           modeled revisions to propose new water levels.  
10          New water levels.

11                         And as an example, index well number 10  
12           uses modeled results. And so now if we go to  
13           Page 13, table 1, it shows the differences  
14           between 1998 and 2001 initial heads. For the  
15           initial head of well number 10, it shows that  
16           the initial heads have been set 32 feet higher  
17           than the 2001 levels. So obviously when you  
18           start your model with such high elevations you  
19           are going to, the model is going to respond to  
20           the drought situation more severely, and show a  
21           lot lower water elevations. And that's one  
22           example. And that's the largest difference, but  
23           again, you can also compare other wells that  
24           have used the model elevations and see how the  
25           initial heads vary between the two data sets.

1 Q. Dr. Akhbari, based on your extensive education  
2 and modeling experience and writing  
3 presentations and dealing in this groundwater  
4 models, do you have a conclusion with regard to  
5 the basis of the current model as used in the  
6 proposal?

7 A. Well, again, the model is a good tool for basin  
8 level decision making and to identify the  
9 overall volume of water that can be withdrawn  
10 from the aquifer; but to make it suitable, make  
11 such predictions as sitting water levels at the  
12 location of index wells, and even referring to  
13 the USGS report itself, the model is incapable  
14 of doing so. And it does need more refinement  
15 and a lot longer comparison of simulated versus  
16 observed data in order to be able to confirm its  
17 performance.

18 Q. Did I understand you to say that the model, the  
19 USGS model itself, says it's not fit for  
20 measuring individual wells?

21 A. Correct. And I have also provided that in my  
22 report, that I have quoted from the USGS report.  
23 On Page 72 of the USGS report it says: That  
24 model results were evaluated on a relatively  
25 large scale and cannot be used for detailed

1 analysis such as simulating water level drawdown  
2 near a single well. And that's a quote from the  
3 USGS report.

4 Q. And if it were said that this model is the best  
5 tool available, is it still adequate?

6 A. Well, the key term here is available. If you  
7 are going to go to a car racing competition and  
8 you only have a truck, where sports cars are  
9 competing with each other, your best available  
10 tool is that truck. But is it suitable or  
11 available?

12 Q. All right.

13 MR. ADRIAN: I have no other questions.

14 THE HEARING OFFICER: Mr. McLeod.

15

16 CROSS EXAMINATION

17 BY MR. McLEOD:

18 Q. Dr. Akhbari, in your experience have you ever  
19 created a basin's scale groundwater level?

20 A. I personally haven't created a basin field  
21 groundwater model, but I created models for my  
22 student. And also in my book, one chapter  
23 explains groundwater modeling, specifically with  
24 MODFLOW, and I have contributed in writing that  
25 chapter, so I do know all the foundations of

1 modeling. I reviewed models and I served as  
2 court adviser for two master thesis on  
3 groundwater. Currently at LWA we are developing  
4 models, they are being developed by more junior  
5 staff and I am using the model results for to  
6 set management decisions and sustainability  
7 goals.

8 Q. So you have some experience with groundwater  
9 models, but you haven't actually created a basin  
10 scale groundwater model?

11 A. I personally have not, no.

12 Q. Are you familiar with the observation data  
13 within the USGS groundwater model?

14 A. Would you elaborate on that, what do you mean to  
15 me by that?

16 Q. So you indicated earlier in your testimony that  
17 you had reviewed this model and learned it, was  
18 this your first experience reviewing that USGS  
19 groundwater model?

20 A. No. USGS groundwater model, if you are  
21 referring to MODFLOW, MODFLOW has been around  
22 for decades. And I have used MODFLOW  
23 previously. I personally have not developed a  
24 basin scale groundwater model, but I have  
25 written a tutorial on how to develop a model and



1 for that I had to learn it and write it in a way  
2 that's understandable by students. The book  
3 that we authored is being sold across the globe.  
4 We finished the first edition, I just finished  
5 the second edition and submitted it to the  
6 publisher and the book has been taught at  
7 different universities here, and in other  
8 countries as well.

9 Q. So within the model, obviously there are data,  
10 as you have alluded to, that enable a model to  
11 do something; is that correct?

12 A. Correct.

13 Q. And one data set, the 1998 you described, as  
14 simulated data?

15 A. Yes.

16 Q. And in other data set you looked at, the 2001  
17 data, you observed as observation data?

18 A. Yes.

19 Q. And you know how that observation data was  
20 derived?

21 A. I received observation data from the District.

22 Q. So what the District gave you as the 2001  
23 observation data, you assumed that was correct  
24 and didn't ask how it was derived?

25 A. I assumed it was correct because I wanted to

1 evaluate the model response to hire water  
2 elevations.

3 Q. But you actually didn't have any role in  
4 deriving that data yourself?

5 A. I did not have any role in deriving that data  
6 myself.

7 Q. And beyond that you don't really know the method  
8 by which the District arrived at it before they  
9 provided it to you?

10 A. No, I did not.

11 Q. In your experience, what is the accuracy of a  
12 water level measurement device such as a water  
13 level tape?

14 A. You mean errors associated with that? With the  
15 measurements?

16 Q. Sure.

17 A. So there could be a lot of sources of error, so  
18 I don't have it on the top of my head what would  
19 be the range of error, but it could be, there  
20 could be error, but that's the most reliable  
21 source of data that we can use anywhere in any  
22 model. So we always on this we do want, we do  
23 want to do measure validation and on the  
24 measured we always rely the measured data. And  
25 verification of that data has been out of the

1 scope of my evaluation.

2 Q. So as again, with the term available and your  
3 truck and sport car analogy, you don't have a  
4 basis to really opine on the number of sources  
5 of error, or their scope, because you don't know  
6 how, whether these measurements were derived  
7 with a tape or whether they were derived by some  
8 other measure or how any of them were derived?

9 A. My task was to evaluate model performance, not  
10 verify data.

11 Q. So the data comes to you essentially unverified  
12 and your job was just simply to see how the  
13 model would react to the data?

14 A. React to the data.

15 Q. And does it follow from that, that you really  
16 don't know whether that observation data is more  
17 accurate than simulated data because you didn't  
18 verify any of it?

19 A. Again, I did not verify the data. I validated  
20 model response to that data. But since the  
21 data, the observed data, did follow the trend of  
22 the other data set, again, the model response to  
23 the observed data, followed the same trend. I  
24 could verify that. The data is acceptable. I  
25 could not --

1 Q. Because -- I am sorry, go ahead.

2 A. Let's say if the data is absolutely off, the  
3 model response cannot follow the same trend. It  
4 should provide you with a different hydrograph.

5 Q. So if I am understanding here, the simulated  
6 data is, has some inherent accuracies, but your  
7 basis for concluding that there is probably some  
8 validity to the observed data it follows the  
9 trend on the simulated data on the graph?

10 A. So when we compare the trend, we can compare.  
11 But the magnitude of those values, that's not  
12 what I can trust for 1998. I can trust the  
13 trend. Because the trend, again, is the  
14 simulated basin's response to the initial data.  
15 So the basin, the model is provided with a large  
16 set of different types of data, like pumping  
17 rates, recharge rates, precipitation,  
18 evapotranspiration, we provide the model at the  
19 very first timestamp with initial heads being  
20 1998 or 2001. Now, as of then, it is going to  
21 be the model response how the basin is simulated  
22 within the model. So when they both follow the  
23 same trend, that's reliable. But the magnitudes  
24 of the 1998 data, that's, that cannot be  
25 confirmed. For the 2001 data, you might want to

1 ask the, about the reliability of that data from  
2 the District, because again, I did not create  
3 that data.

4 Q. In your experience which would be more accurate,  
5 a water level measurement taken from 1939, with  
6 an unknown method from a non surveyed elevation,  
7 or water level measurement taken from 2008 with  
8 a calibrated electronic water level tape from a  
9 surveyed location?

10 A. Well, the second one has a more reliability  
11 associated with that. Again, you cannot confirm  
12 for sure that one is more accurate than the  
13 other one; but there is a lot more uncertainties  
14 associated with the 1939 data that was taken  
15 that you just described. So with that  
16 uncertainty I cannot answer that question with  
17 certain.

18 Q. In your experience how should the accuracy of  
19 the observed groundwater level data impact the  
20 targeted position of the modeled calibration?

21 A. Well, with the observed data when we have a  
22 longer set of observed data then we can, we have  
23 the chance to evaluate the model response to  
24 different conditions, physical conditions. And  
25 with that, using the two observed versus

1 simulated results, then we can play with model  
2 parameters. We usually run a sensitivity  
3 analysis to identify which parameters the model  
4 is sensitive to, and then we start adjusting  
5 those parameters to get the simulated values as  
6 close to the observed values.

7 Q. Using whatever you understand to be the standard  
8 for calibration, when is a groundwater model  
9 considered to be calibrated?

10 A. It depends for what purpose it's being used,  
11 whether it's academic level or whether it's  
12 basin level decision making or whether it's for  
13 a finer scale decision making, and for that we  
14 have different types of statistical methods that  
15 could be used. Root-mean-square error is one of  
16 them, but not the best one. There are so many  
17 metrics that could be used.

18 Again, at the academic level we usually  
19 use a set of three to five different metrics to  
20 evaluate different parts of the hydrograph.  
21 However, for the decision making situations like  
22 this, we do focus on specific events and we try  
23 to lower the error as much as possible for those  
24 specific locations.

25 For example, in one project that I

1 developed a simulation for a hydropower  
2 generating company, they were very sensitive to  
3 flooding events. And we did calibrate models  
4 also for every single flood event to make sure  
5 the model responds well to those events. But  
6 again, this model and how it's been calibrated  
7 it's been very well calibrated for a basin level  
8 scale, but not for a specific well locations.

9 Q. So as I am understanding your response, or  
10 actual basis level on decision making purposes,  
11 you would not consider a model calibrated unless  
12 you had reduced error to the maximum extent  
13 possible for that model?

14 A. Correct. We always try to reduce errors to the  
15 maximum possible, and that maximum possible, if  
16 it is out of a specific range in academia, that  
17 can be, there are different categories of  
18 acceptable, good, excellent or poor. That's in  
19 academia. With that you can use those metrics  
20 in your scientific paper to prove that the  
21 simulation model that you developed is reliable  
22 and now you can introduce your methodology to  
23 that model and get your results.

24 Again, that's for academia. But in  
25 real world applications we do have to focus on

1 the specifics, we cannot rely on, okay, the bias  
2 value at this location for this model is like  
3 .8, so it's correct. No. We do have to focus  
4 on specific events and specific locations  
5 depending on what the model is being used for.

6 Q. So that's, if you applied the metrics for  
7 academia, what difference would that make on  
8 your conclusion on calibration?

9 A. I am not sure if I understand your question  
10 well. What is this?

11 Q. If you were using this model for an academic  
12 purpose, to write a study paper, how would that  
13 impact your conclusion on calibration of the  
14 model and whether it's accurately or  
15 sufficiently calibrated?

16 A. Again, I would calculate it with different  
17 metrics and evaluate those values with ranges  
18 that have been introduced in the literature to  
19 say, to see if the, each specific metric is  
20 within an acceptable or better range or not.  
21 And that way I could tell if we could use this  
22 model or not in academia.

23 Q. When you are in the industrial setting, how do  
24 you determine that you have reduced error in the  
25 model as much as possible?



1 A. Because you are trying to, again, there are a  
2 lot of stakes associated with any decision  
3 that's made using modeling results. That's why  
4 you need to reduce the error values to the level  
5 where the model results can be acceptable, but  
6 all the parties that are using those model  
7 results.

8 It is impossible to get an error value  
9 of zero, so that's never going to happen. But  
10 it has to be as close as possible.

11 Q. And can you quantify that for me?

12 A. No, I cannot. It's case specific and it  
13 completely depends on where and when and how you  
14 are going to use that model results.

15 Q. So there is, I mean, there is really in that  
16 sense, not a definition of industrial  
17 calibration that's sufficiently standard for us  
18 to know from one model to another how that is  
19 met?

20 A. I cannot define anything, again, the model has  
21 to simulate the actual situation to the best, to  
22 the best extent possible. Again, if it's basin  
23 scale for that basin, if it's more local scale  
24 for that very specific location.

25 Q. How low do you determine if the model has

1 simulated to the best possible degree of  
2 accuracy? How do you know that you have  
3 minimized error to the maximum extent possible?

4 A. You need longer data, longer observed data in  
5 order to do that analysis. Without observed  
6 data, you cannot really draw that conclusion.  
7 And for that data you need longer, longer  
8 observed data.

9 Q. What was the length of the observed data set  
10 that you used here?

11 A. Well, again, as I downloaded the data, at  
12 different stations the data ends in 2008. And  
13 at different stations it starts from I think  
14 1939. I can give you a more accurate, yes,  
15 substations 1939, some stations 1952 and one  
16 station 1970, is the beginning of the  
17 observation. And with that, however, these are  
18 annual observed data, which means that all the  
19 seasonal fluctuations have been ignored. And  
20 when I say 1939 to 2008 it doesn't mean we have  
21 data for every year. Sometimes it's 1939, one  
22 observation and there is no observation until  
23 2000. And then there are like seven or eight  
24 observations after 2000. So it's not a  
25 continuous observed data.

1 Q. So also throughout the time scale for the  
2 observation of data, you have people taking  
3 readings as long ago as 1939; is that correct,  
4 presumably?

5 A. For the observed data you mean?

6 Q. Yes.

7 A. Yes, as provided in the USGS report for some  
8 wells the data goes back to 1939.

9 Q. And it would follow that whoever did that, they  
10 were using the technology available in 1939 to  
11 measure that observed data?

12 A. Yes.

13 Q. Do you know from your experience, over time from  
14 1939 to 2008, have technological methods to  
15 measure and observe water levels improved during  
16 that timeframe?

17 A. Yes.

18 Q. So within that time scale of observed data from  
19 1939 to 2008 would you expect there to be  
20 varying qualities of reliability in those  
21 measurements taken at different times in that  
22 time scale?

23 A. Yes. But it doesn't mean that all of their data  
24 is unreliable.

25 Q. And, likewise, because you really don't have the

1           particulars of how any of the measures were  
2           taken, somebody could have made errors in the  
3           more current, even with better technology?

4       A.    Yes.  Or the device might have failed.  Or the  
5           connection might have been disconnected.  There  
6           are so many sources of error.  But we do rely on  
7           the observed data in order to calibrate our  
8           models.  And without observed data you can never  
9           trust any model.

10     Q.    Once a model is calibrated can it be used to  
11           predict a groundwater level?

12     A.    Depending how it's calibrated and for what  
13           purposes, yes.  If it's been calibrated to  
14           reliably simulate groundwater levels, yes, it  
15           can; otherwise it cannot.

16     Q.    And that would assume your understanding of  
17           calibrated to an industrial decision making  
18           standard; is that correct?

19     A.    Yes.  And again, one measure that I used I  
20           compared the simulated error versus the range of  
21           long term fluctuations in the water level and  
22           compared that.  So the total range that over 50  
23           years or over a longer term, that the water  
24           level has fluctuated.  Now, the simulated  
25           results are, for example, I use well number 741,

1           which had about eight feet of total, over eight  
2           feet of total fluctuates over a period of 50  
3           years. And about five feet of maximum  
4           difference between simulated versus observed  
5           data. Which means that that translates in to 60  
6           percent of the total range of groundwater level  
7           fluctuations over 50 years. That's how much  
8           inaccurate the model results can be at this  
9           specific location of that monitor well. And  
10          that's why I believe that this model is, at its  
11          current setting, does not have the capability to  
12          make such decisions.

13        Q.    So your belief is that the USGS Equus Beds model  
14           that you reviewed cannot be used to predict  
15           groundwater levels at a specific location within  
16           the model?

17        A.    That's correct.

18        Q.    In your report you provided a table with  
19           statistics on simulated and observed water  
20           levels on table 3; is that correct?

21        A.    Correct.

22        Q.    Are the wells you selected in table 3 all within  
23           the ASR basin storage area?

24        A.    They are. I can tell you in a second. Most of  
25           them are, I am just going to confirm if all of

1           them are or not. Most of them are. So Page 25  
2           of my report that copies figure 34 of the USGS  
3           report, shows the location of those monitoring  
4           wells in red circles. And as you can see, most  
5           of them are within the basin storage area and  
6           the rest are surrounding that. But they are all  
7           within the model.

8       Q.   How many are not within the basin storage area?

9       A.   I don't exactly know, because I didn't have the  
10       Latin long information of those monitoring  
11       wells. So I just like using visual comparison.  
12       I can tell they are within the basin, the basin  
13       storage area, but I can't tell you how many are  
14       exactly inside or not.

15      Q.   Okay.

16      A.   But these are the 20 selected wells, these are  
17       the 20 wells that have been selected by the USGS  
18       report itself. And as you can see, I am  
19       referring to the USGS reports here.

20      Q.   Should wells outside the ASR basin storage area  
21       be used as a basis to predict or describe the  
22       accuracy of model predictions within the basin  
23       storage area?

24      A.   I prefer to use those wells that are within.  
25       They can still be used, especially for the index

1 wells that are located near the boundary, the  
2 boundaries of that, that area. Definitely the  
3 neighboring wells can have an affect on those  
4 wells. So it depends on the distance of those  
5 wells outside of that area. But if they are  
6 close enough definitely, if they are too far  
7 away, they might not have that much of an  
8 impact.

9 Q. Are the wells outside the basin storage area  
10 useful as a basis to predict the accuracy of  
11 model predictions within the basin storage area  
12 or near the ASR index wells?

13 A. Did I just answer this question? Again, like  
14 those wells that are outside of the basin  
15 storage area, and they are in the vicinity, they  
16 are within a distance, where the groundwater  
17 level fluctuations can impact the levels inside  
18 the basin storage area, yes, they can. If they  
19 are far away, they are not that useful. But all  
20 of these, these monitoring wells are, again  
21 visually, are either within the basin storage  
22 area or in the vicinity of that.

23 Q. Are the water level measurements that you looked  
24 at only the ones that are provided in table 3 of  
25 your expert report? Are those the only well

1 sites that you looked at?

2 A. Yes. Which are the same as those the USGS  
3 report used, and those are the ones that I had  
4 calibrated versus observed data.

5 Q. If one of the wells you analyzed in table 3 of  
6 your report were in the proximity to an index  
7 well, would that illustrate the accuracy of the  
8 model at the nearby index well?

9 A. Yes, it can, definitely.

10 Q. And if you look at the well location for well  
11 1038, is that located in proximity to index well  
12 number 16?

13 A. What is the number of the well again?

14 Q. 1038.

15 A. (Witness reviews documents). I can't locate it  
16 here. Do you mind if I open my laptop to  
17 magnify it?

18 THE HEARING OFFICER: Yes. I can't see  
19 it either.

20 A. And you said comparing it to which index well?

21 Q. Index well 16.

22 A. I can't really confirm these two maps, because,  
23 again, they are not.

24 Q. And if you don't have a basis to answer the  
25 question, that's fine.



1                   In table 3 of your report what was the  
2                   average absolute difference between observed and  
3                   simulated groundwater elevations?

4   A.   I have reported it, I think it's 37 percent. I  
5       need to go back to my report. I say that over  
6       30 percent on average.

7   Q.   How about for specifically that well site 1038?

8   A.   For 1038. Average is five percent, which is the  
9       lowest one followed by another well, which is 11  
10      percent. And then they go up higher. Basically  
11      that's the only single digits.

12   Q.   So based on that analysis of that well, on table  
13      3, what would we predict in terms of the  
14      difference in feet of water level on the average  
15      at the site of well 1038?

16   A.   At the site of 1038 the difference is about two  
17      feet, 1.98 feet difference on average.

18   Q.   And in the case of that well, in your  
19      professional judgment, do you think that that  
20      average residual of less than two feet is an  
21      acceptable calibration target for that site?

22   A.   Yes. For that site, yes.

23   Q.   In your expert report you supplied a hydrograph  
24      from the USGS model report for well 1038; is  
25      that right?

1 A. Yes.

2 Q. In the hydrograph of 1038, in what year is the  
3 highest difference between predicted and  
4 observed groundwater water occur?

5 A. Seems to be 1939.

6 Q. What about the period from 1957 through 2008,  
7 what was the average difference during that  
8 time?

9 A. That was the best match that the model had  
10 provided among all the wells.

11 Q. And if we look at that time specifically from  
12 '57 to 2008, what was the average difference for  
13 that, just that?

14 A. I don't have that value, but it seems to be very  
15 low.

16 Q. In your judgment is the model under predicting  
17 or over predicting groundwater levels in  
18 hydrograph 1038?

19 A. I don't draw any of those conclusions, I would  
20 say it acceptably simulates this specific wells,  
21 well, this specific well. But that's again, the  
22 only well that's being simulated.

23 Q. So that particular well you believe would be  
24 acceptably, that the model would be acceptably  
25 showing for prediction of groundwater levels at

1           that site only?

2       A.    Yes.

3       Q.    In table 3 how many wells have an average error  
4           of less than two feet?

5       A.    I think 11.

6       Q.    Out of how many?

7       A.    20.  However, two feet is acceptable for well  
8           1038, because the total difference between long  
9           term water elevation fluctuations is 37 feet.  
10          So out of 37 feet, if your error is two feet,  
11          it's acceptable.  However, in another well, for  
12          example, if the total range is four, which is  
13          for well 1448, 4.02 feet is the total long term  
14          difference in fluctuation, and 1.38 is the  
15          average error.  So that accounts for 34 percent  
16          of the total range.

17      Q.    And for that well you feel that would be  
18           unacceptable?

19      A.    That would be unacceptable.  Or if you are going  
20           to make the results for that specific well, the  
21           error needs to be taken into account somehow.

22      Q.    And let me ask the question this way because it  
23           may be shorter, out of all of those wells with  
24           less than two feet average error, do you believe  
25           that well 1038 is the only one as to which that

1 error is?

2 A. I could compare all of those with long term  
3 range and then I can answer. Do you want me to  
4 do it right now and answer your question?

5 Q. Yes, please.

6 A. Sure. 733 can be acceptable. 1037 can be  
7 acceptable. 1151. Maybe 1445, I am not sure  
8 though.

9 Q. Is that the entire list?

10 A. Yes. Sorry.

11 Q. I didn't know if you were still looking or if  
12 you were finished.

13 In your expert report rebuttal you  
14 state: While the model does predict water  
15 levels, not all of these predictions have the  
16 accuracy to be used as proposed in set adjusted  
17 water level values at the location of the index  
18 wells. What level of accuracy do you consider  
19 adequate for the purpose of setting adjusted  
20 water level values at the location of the index  
21 wells?

22 A. Again, that goes back to the range of  
23 fluctuations at that location and the percent  
24 of, I would say, again, it seems very, these  
25 are, these are decisions that are made through

1 long term negotiations between different parties  
2 in conflicts. These are not decisions that a  
3 modeler would make to identify those errors. So  
4 again, as a modeler, I can refer to an academic  
5 literature for scientific papers; but when we  
6 are in industry, again, I go back to my example  
7 of that hydropower generator. So any  
8 underestimation or overestimation of flood  
9 events could be translated in to several hundred  
10 thousands or millions of dollars in either loss  
11 or revenue for that. For that specific client.

12 So because of that they have a very  
13 sensitive on the model accuracy for those  
14 events, and that's why we try to minimize the  
15 errors as much as possible to the point that we  
16 partnered with the software developing team.  
17 And we started modifying the main source code of  
18 that software, along with the modification where  
19 we made to the model along with further  
20 collection of observed data, altogether to  
21 increase the accuracy of that model.

22 Here for this model, there are two  
23 parties in conflict. I, as a modeler, cannot  
24 tell you, the answer to that question, what  
25 would be the acceptable range. That range can

1 be negotiated by the two parties and accepted.

2 Or if there are more than two parties.

3 Q. So if few parties and a natural hearing officer?

4 A. Then the hearing officer can decide who is  
5 having further demands than possible.

6 Q. And I think you have acknowledged that a zero  
7 error rate is not possible for a model.

8 A. It's impossible. And any model that claims  
9 that, you should question the modeler, or the  
10 honesty or mental situation of that model.

11 Q. So as we were looking at a list of wells, with  
12 the lower, average error under two feet, you had  
13 mentioned specifically well number 1415 as it  
14 may be acceptable. What's the error rate as to  
15 that well?

16 A. You mean 1445, right?

17 Q. I am sorry, 1445.

18 A. So this is about one sixth of that, it's about  
19 15, 16, 17 percent error. So I would say again  
20 for academic evaluations, I would say less than  
21 10% of error, I would accept it. Between 10 and  
22 20 could be almost fair, but again in academia,  
23 but less than 10% I would consider a more  
24 acceptable range of error.

25 Q. Okay. In terms of your testimony that there was

1 a tendency in the simulated database model to  
2 underestimate levels, what's the significance of  
3 that for purposes of the ultimate result in the  
4 modeling for which the model was being used?

5 A. So we are using a model that mainly tends to  
6 underestimate water levels. Which means that it  
7 provides you with results that are lower, lower  
8 elevations than actual elevations. And then in  
9 the City's proposal we are using model results  
10 to set, to propose new index levels. So when we  
11 are using the results that are already being  
12 underestimated, providing you with lower  
13 elevations than what would happen in reality,  
14 and then we are proposing, therefore, what we  
15 are proposing is lower than what would actually  
16 happen. Does that make sense? Or do you need  
17 more clarification?

18 Q. So if I am understanding, the impact of the  
19 errors that you observed in the model and these  
20 underestimations would be that it would over  
21 present the severity of the drought impact, in  
22 your opinion?

23 A. That is correct, yes.

24 Q. In the table 3 wells, what is the head change in  
25 the wells from the up gradient to the down

1 gradient?

2 A. Would you please repeat the question.

3 Q. What is the head change in the table 3 wells  
4 from the up gradient to the down gradient?

5 A. Table 3?

6 Q. Table 3. The wells used in table 3.

7 A. Okay. So the location of the wells, I don't  
8 know which ones are gradient off the top of my  
9 head, but the range of differences, the maximum  
10 range of difference is between 3.09 and 37.01.

11 Q. Do you know what's the elevation difference?

12 A. We can refer to table 1. Oh, that's for the  
13 index wells. Yeah, we can refer to figure 4 and  
14 approximate the elevations using those graphs.

15 Q. Dr. Akhbari, is it your understanding that  
16 Wichita used the model to determine levels at  
17 individual wells?

18 A. Yes.

19 Q. And what was the source of that understanding?

20 A. Table 210 of the City's proposal it is provided,  
21 a copy is provided on Page 18 of my report. And  
22 the fourth column from the left is basis for  
23 proposed level, which is either existing or  
24 modeled.

25 THE HEARING OFFICER: I am sorry, what



1 page of your report was that?

2 THE WITNESS: 18.

3 THE HEARING OFFICER: Thank you.

4 Q. How do you constrain your parameter manipulation  
5 to reduce error during calibration?

6 A. I personally did not calibrate the model, but  
7 there are defined ranges for each parameter that  
8 you, you play with those values within those  
9 ranges, or experimental or using more local  
10 experts. It depends on the model being  
11 developed.

12 Q. Could you tell us what is the groundwater  
13 elevation at well 1692?

14 A. 1692? At what time?

15 Q. The highest. The maximum groundwater elevation  
16 that is shown for that well in the time scale of  
17 the data set that you have got.

18 A. Seems to be 1470.

19 THE HEARING OFFICER: I am sorry, which  
20 well?

21 MR. McLEOD: 1692.

22 THE WITNESS: Page 29 of my report.

23 Q. And the same question for the elevation at well  
24 Number 546.

25 A. 1354 almost, slightly lower than that.

1 Q. And so what would be the difference between the  
2 two elevations?

3 A. 120, almost 120 feet.

4 Q. You said that 11 wells in table 3 had less than  
5 two feet of error. What percentage of error is  
6 two feet divided by 120 feet?

7 A. The percentage would be less than 2%, maybe less  
8 than one and a half percent, but I don't know  
9 why you are comparing that. I mean, these are  
10 not two comparable values. In other words, you  
11 are comparing differences of water elevation in  
12 one well, with the total difference between  
13 water elevation in the entire basin.

14 In other words, let's say I stand here  
15 and someone stands on the Rocky mountains and  
16 can you compare our elevations? Our height?

17 Q. You can compare your height.

18 A. With the same level? I mean, one would be much  
19 taller than I am.

20 Q. Does it signify to you that there is a water  
21 level change within the basin storage area when  
22 you look at two wells that have those differing  
23 elevations?

24 A. Water levels change always, yes.

25 Q. Do you know if that's how the USGS calibrates

1 models?

2 A. Again, models are being calibrated by adjusting  
3 parameter values, different coefficient in the  
4 flow equations, and different parameters, maybe  
5 hydraulic conductivity. So they are being  
6 calibrated using these different parameters.  
7 And you calibrate the model to, and you compare  
8 water levels to evaluate the impact of those  
9 adjusted parameters on water level. You do not  
10 adjust water levels to calibrate the model.

11 Q. Was the City's modeling the only modeling study  
12 that you evaluated for purposes of your work in  
13 relation to the ASR proposal?

14 A. Yes.

15 Q. So you would not have looked at the modeling  
16 done by any of the other consultants that were  
17 providing opinions in the case?

18 A. No.

19 Q. And to the extent that the simulated values  
20 would underestimate water levels, would that be  
21 as true at the start of modeling as at the end?

22 A. That it is underestimating values?

23 Q. Yes.

24 A. I don't recall it exactly, but if we refer to  
25 the graphs provided in figure 4, which is from

1 Page 26 to Page 29 of my report, again, visually  
2 you can draw that conclusion that in the  
3 majority of the wells from the beginning to the  
4 end it's, the simulated values are mainly being  
5 underestimated.

6 Q. And from the work that you did were you able to  
7 form any conclusions of your own as to what  
8 point during an eight year drought, of the type  
9 modeled by the City, the water levels in the  
10 different index cells, would go below the 1993  
11 levels?

12 A. I don't recall that.

13 Q. That's not part of your expert opinion, is it?

14 A. It is not. And if I -- if I am asked to give  
15 that analysis it's an easy comparison, but I  
16 don't have the model results in front of myself  
17 to do that 1993 levels to answer that question.  
18 But again, I just, it just came to my mind,  
19 again, referring to the USGS comparison of  
20 simulated versus observed data, it does include  
21 1993, year 1993 again. And again, if you look  
22 at Page 26 through Page 29 of my report, or  
23 figure 40 of the USGS report that might be a  
24 little bit bigger and easier to follow. Then  
25 you can compare simulated and observed water

1 elevations in 1993. And again, that could be  
2 confirmed that the model is underestimating  
3 water levels in 1993.

4 Q. If the average error within a basin is 2.1, I am  
5 sorry, 2% if the average error in the basin is  
6 2%, is that model calibrated, in your opinion?

7 A. For the basin level decision making, yes.

8 Q. And could be used to predict aquifer behavior  
9 within the basin?

10 A. Please elaborate on aquifer behavior. If you  
11 mean the total volume of water that could be  
12 extracted or recharged in to the aquifer, yes.  
13 If you are referring to water elevations at the  
14 specific locations, no.

15 Q. Thank you.

16 MR. McLEOD: I don't have any further  
17 questions for the witness.

18 THE HEARING OFFICER: Mr. Oleen.

19 MR. OLEEN: No questions by DWR.

20 THE HEARING OFFICER: Ms. Wendling.

21 MS. WENDLING: Yes.

22

23 CROSS EXAMINATION

24 BY MS. WENDLING:

25 Q. Can you flip to your CV, which is at the end of

1           your report, Exhibit 64.

2           A.    Yes.

3           Q.    And in your professional experience you listed  
4           several years of work.  Are you able to identify  
5           which of these things that you have worked on  
6           include modeling?

7           A.    Well, modeling almost all of them groundwater  
8           modeling, the one, as a research assistant in  
9           Colorado State University.  Number 20.  
10          Groundwater available to supply domestic water  
11          demands.  And also the one the current position  
12          that I have at Larry Walker Associates, again,  
13          as part of my role in defining sustainability  
14          criteria for the groundwater sustainability  
15          plans, I have been using model results in  
16          reviewing some, some models that are being  
17          developed; but they are not finalized yet, but  
18          they are being developed by more junior staff.

19          Q.    And can you tell me what a groundwater  
20          sustainability plan is.

21          A.    Well, in California groundwater was not  
22          regulated before 2014, but in 2014 Governor  
23          Brown enacted a new law which is called SGMA,  
24          Sustainable Groundwater Management Act that says  
25          groundwater can best be managed locally.  And

1 they identified over 500 basins across  
2 California, and priorities had them based on  
3 like critical conditions, high priority, medium  
4 priority and low priority. Anything above  
5 medium priority they needed to develop a  
6 groundwater sustainability plan by 2020 or 2022,  
7 depending on the severity of the problem in that  
8 basin. And in that plan they should lay out a  
9 plan that exactly specifies how do you reach  
10 sustainability within 20 years.

11 And to reach sustainability they have  
12 identified six undesirable results that have to  
13 be avoided. So they have to show that within  
14 the next 20 years they are going to reach a  
15 point where these six undesirable results being  
16 depletion of groundwater, reduction of  
17 groundwater storage, seawater intrusion, land  
18 subsidence, depletion of surface water connected  
19 to groundwater and groundwater quality.

20 So these six undesirable results need  
21 to be avoided by 2040 for critical basins and  
22 2042 for medium and high priority basins. So we  
23 are developing the plans for four of the basins  
24 in California.

25 Q. And that includes developing models?

1 A. For these basins we have to develop models in  
2 order to, because you need to convince the  
3 Department of Water Resources that you, that  
4 your plan is effective, and you are moving  
5 towards sustainability, and you have to define  
6 management actions and some infrastructure  
7 changes in order to reach that sustainability.

8 To do so, you have to have a model to  
9 define these scenarios and evaluate whether or  
10 not they help you achieve your sustainability.

11 Q. You mentioned a tutorial on modeling in your  
12 textbook, do any of your other publications  
13 address modeling?

14 A. The ones that my students have published, yes.  
15 Number 4. And there is another one that's not  
16 listed here, and it has been recently accepted,  
17 and that's in far east so that is not included  
18 here.

19 Q. So in your work with modeling have you worked  
20 with groundwater vistas?

21 A. That's the interphase that I used to, to  
22 evaluate this model. So that's a graphical user  
23 interphase I use for one of the, one of the GUIs  
24 that you can use for the model.

25 Q. In your, well, as I understand it you evaluated



1 the fitness of the model and came to the  
2 conclusion that it's not fit for evaluating at  
3 an individual well location, but adequate at  
4 more of the basin level as a whole. Did you  
5 evaluate the fitness for determining or  
6 developing the minimum proposed minimum index  
7 level?

8 A. Again, those are similar things. So proposed  
9 index levels they have to identify an elevation  
10 at the location of a specific well. So again,  
11 the model, as my report concludes, and as the  
12 model, the model's documentation itself, the  
13 USGS 2013 USGS report, it explicitly mentions it  
14 is not suitable for performing such analysis.

15 Q. So your conclusion is that the model is not fit  
16 for establishing a minimum?

17 A. Not in its current state.

18 Q. When you were analyzing the performance of the  
19 model, to analyze the suitability, were you also  
20 looking at the specific input files?

21 A. Yes.

22 Q. Did you have any findings from them?

23 A. So I cross-checked the multiple parameters being  
24 introduced to the model being the  
25 evapotranspiration, recharge rates, layer

1 thickness, top and bottom of the layer, and to  
2 make sure that the independent data is being  
3 introduced to the model correctly and I could  
4 confirm that. Those were a part of my  
5 evaluation and I could confirm that the model  
6 structure is correct and it's been set up  
7 correctly for the large scale.

8 Q. Did you analyze the process used by the model to  
9 determine the minimum index levels?

10 A. The process that has been explained in the  
11 City's proposal, yes, I did review that.

12 Q. And what did you find in that process?

13 A. Again, I believe that this model cannot be used  
14 for setting a specific, setting elevations at a  
15 specific level, I could not confirm that.

16 Q. You mentioned root-mean-square error in your  
17 testimony. Can you explain to me what that is?

18 A. Yes. So the difference between one single  
19 observed versus one single, it's corresponding  
20 simulated value, it is called error. And over  
21 time or over space when you take an average it  
22 would be the mean error. So when we take the  
23 average over the entire time series, and over  
24 the entire basin, that would be the mean error  
25 for that basin. And then we took a root and

1 square it. Root -- and square and then take the  
2 root. Sorry. We square every difference, every  
3 error, and then take the average of the  
4 summation of all of these squares.

5 So that's why, that is why I claim that  
6 this is not a specific, the statistical metric  
7 that could be used to confirm the performance of  
8 a model that's being used for local analysis.  
9 That error is telling you how the model is  
10 behaving for the entire basin, not at the  
11 location of a specific wells.

12 Q. So if we look on Page 25, figure 3 of your  
13 report, how does your finding regarding the  
14 root-mean-square error translate when we look at  
15 it on this map?

16 A. Again, this is, this shows how spread the wells  
17 are in terms of calculating that error value.  
18 So the error value that you are getting is the  
19 error, is the value that represents this entire  
20 region. Not a specific well. And that's why I  
21 came up with table 3 that evaluates the model  
22 results at the location of a specific well, as  
23 opposed to giving you one, and again, I am going  
24 to go back to my example of weather temperature.  
25 Again, the average temperature of the U.S.

1 cannot be applied for one single city. We  
2 cannot say if today the average temperature of  
3 the United States is 35 degrees, then Miami and  
4 Chicago and New York, they are all 35 degrees.  
5 They should be treated differently.

6 Q. And are the sites you analyzed, are those the  
7 red dots or what's the significance of the red  
8 dots?

9 A. Again, it's a copy of the USGS report that shows  
10 the locations of the selected monitoring wells.

11 Q. So those were selected by USGS?

12 A. By USGS, yes.

13 Q. Okay. You have expressed there is a difference  
14 between the simulated levels and the observed  
15 groundwater levels. In analyzing the model in  
16 the proposal, have you seen that more pronounced  
17 in any other areas over the others or is that  
18 consistent?

19 A. It is not consistent, as shown in figure 4 at  
20 different well locations. It varies. Again,  
21 more tabular version of this figure is provided  
22 in table 3, so it does vary from well to well.

23 Q. Do you know why that is?

24 A. So many different things could cause this model  
25 setting. And again, so when we calibrate a

1 model for such purposes, then we focus on those  
2 specific locations and try to adjust model  
3 parameters in the vicinity of those locations.  
4 So that's how we can get more accurate results  
5 at the location of these wells or these index  
6 wells. But if you will come up with a generic  
7 value for parameter for an entire basin or a big  
8 region of the basin, then what you get, again,  
9 it can result in to these differences. So model  
10 parameters have to be adjusted more locally.

11 Q. Just the parameters, you don't need separate  
12 models?

13 A. You don't need separate models, no. You have  
14 the ability to have more finer resolution at a  
15 specific cells and courser resolutions at other  
16 cells. So you don't have to provide, you don't  
17 have to refine your entire model to make it  
18 finer of those, you can just focus on specific  
19 areas and refine. And you can refine resolution  
20 in portions of that model as opposed to the  
21 entire basin.

22 Q. So if you were trying to use the model in  
23 question, I don't know what we are calling it,  
24 to identify the impact at a specific well, what  
25 would you do?

1 A. Again, I would calibrate the model for those  
2 specific locations.

3 Q. Okay.

4 A. And that requires more observed data, and more,  
5 more technical work on calibrating the model.

6 Q. But it's possible?

7 A. It is possible.

8 Q. Without developing a new model?

9 A. No, you don't have to develop a new model.

10 Q. Did you, in your review and analysis, look at  
11 the storage capacity of the aquifer?

12 A. I don't recall it on the top of my head, but I  
13 am not sure, I maybe looked at the water  
14 elevations to the best I can remember. Oh, let  
15 me look at this. Oh, yeah. Here. Yes.  
16 Actually, not in the model, but in the model  
17 documentation. Again, like, I referred to the  
18 USGS report. So here, and I am actually glad  
19 you brought it up that's another source of  
20 concern that I had.

21 On Page 72 of the USGS report it  
22 compares the changing storage between Arkansas  
23 River and between the simulations for 2007 and  
24 2008. So in one year there is overestimation of  
25 storage. In another year, just by chance, in

1 those specific two consecutive years, there is  
2 an underestimation. So to be more specific, 15%  
3 of overestimation of storage in 2007 and 18% of  
4 underestimation of storage in 2008.

5 So when you sum up these two values it  
6 returns 3% because minus 15% plus 18% is 3%.  
7 But that is not, you cannot guarantee that that  
8 would be the case in every consecutive year. So  
9 if that error value goes the other way, and they  
10 have cumulative affect on each other, then two  
11 years can translate in to 32% or 33%. And ten  
12 years could translate in to over 100% error.  
13 Who knows? Or the other way. So these two  
14 years, by chance, balanced out each other. But  
15 that could not be the case all the time.

16 Q. And if you want to turn to Page 10 of your  
17 expert report from Exhibit 64.

18 A. Yes.

19 Q. Towards the bottom of paragraph 23.

20 A. Yes.

21 Q. You say: However, it is not clear why minimum  
22 groundwater levels required to maintain 30 MGD  
23 of physical ASR recharge capacity should be the  
24 basis to calculate the Modified Minimum Index  
25 Levels. Can you clarify what you meant by that?

1 A. Yes. In the City's proposal it says that, so I  
2 am going to start from the middle of the  
3 paragraph, but it says: This comparison  
4 indicated that the simulated groundwater levels  
5 presented in the end of the 1998 period were the  
6 best match for presenting the minimum  
7 groundwater levels required to maintain 30  
8 million gallons per day of physical ASR recharge  
9 capacity. But I could not find anywhere in that  
10 report, or the other reports that I evaluated,  
11 what is the basis of that 30 million gallons per  
12 day. So I don't know if there is an answer for  
13 that, but I couldn't find it.

14 MS. WENDLING: I have no further  
15 questions.

16 THE HEARING OFFICER: Mr. Adrian.

17 MR. ADRIAN: I have no questions.  
18 Given the nature of the last testimony for the  
19 last hour and 40 minutes, or whatever it's been,  
20 it seems unnecessary to ask this; but I would  
21 like to ask him to be recognized as an expert to  
22 give the opinions he has given.

23 THE HEARING OFFICER: Yes, I agree.  
24 And I believe that we are trying to have you out  
25 of here by 2:30. So five minutes to go. Any



1 more questions?

2 MR. McLEOD: I have just a few. I  
3 don't know that I will even need the microphone  
4 hopefully people can hear me.

5

6 RE CROSS EXAMINATION

7 BY MR. McLEOD:

8 Q. I want to make sure I understood an answer you  
9 gave to Ms. Wendling when you were asked about  
10 on your CV what it showed in terms of your  
11 personal experience creating a groundwater  
12 model. Was it your answer you personally did  
13 that one time as a research assistant at your  
14 Ph.D. institution in Colorado?

15 A. I have published one. That's something that has  
16 a publication on. But, no, I have worked on  
17 with, with mock flow, I learned the model to be  
18 able to write the corresponding chapter on the  
19 book. So I learned the model, worked with the  
20 model, learned it and provided a tutorial in my  
21 book on this. And I did work, I did develop a  
22 model again, not a basin level, but a smaller  
23 level, smaller scale model during my Ph.D. And  
24 beside from that I have been reviewing my  
25 students' models, I have been providing guidance

1 to my students to develop their models. And  
2 again, I have been using the models that have  
3 been developed by more junior staff within our  
4 company.

5 Q. So you have personally developed one groundwater  
6 model?

7 A. Yes.

8 Q. And then you have experience with models  
9 developed by your students and more junior  
10 associates where you work?

11 A. Yes. Yes. And again, because I do usually, we  
12 have in hydrology and water resources usually  
13 there are specific experts for surface water  
14 simulation or groundwater simulation or  
15 reservoir or watershed, so I am more, I define  
16 myself as a generalist because I have experience  
17 with a really wide variety of models in terms of  
18 water quality, water quantity in the rivers and  
19 reservoir operation, watershed scale,  
20 groundwater. That's what any of these models,  
21 if you are going to focus on one model I have  
22 developed a few of each. But I am a modeler, I  
23 am the one who links all of these models, who  
24 integrates all of these models and creates a  
25 series of linked models together. So I am the

1 one who understands the linkages between  
2 different models and can work with all of them.

3 Q. Have you, or junior associates working under  
4 your supervision, ever developed a groundwater  
5 model with a root-mean-square error less than  
6 5%?

7 A. Root-mean-square is not what we commonly use for  
8 our modeling purposes. We usually use a lot of,  
9 other metrics, such as gnat and she will suck  
10 cliff that provide a more detailed comparison of  
11 two time series, Nash-Sutcliffe is one of them,  
12 percent bias is one of them, which is much  
13 simpler than root-mean-square, R-2 is another  
14 one, which is another regression and the  
15 coefficient regression that you get, things like  
16 that.

17 Q. And for that reason, that you have used other  
18 metrics, are you not able to answer the question  
19 as I phrased it?

20 A. Again, from we have not used a specifically  
21 root-mean-square, I cannot answer.

22 Q. Can you tell us, Dr. Akhbari, how you came to be  
23 selected to do this work for the Groundwater  
24 Management District?

25 A. I think Tom had used my book in his previous

1 cases and that's how he knew me and how he  
2 approached me.

3 Q. Have you ever done any previous work for the  
4 District?

5 A. No.

6 Q. So Mr. Adrian basically he read your book and  
7 used your book and contacted you and asked could  
8 you come do some work for the District?

9 A. Yes. And he knew me through a mutual  
10 acquaintance, but that's how he got my contact  
11 information, but he had my book.

12 Q. Who was the future acquaintance?

13 A. Who was that?

14 Q. Yes.

15 A. Hannah Loft (ph).

16 MR. McLEOD: I don't have further  
17 questions for the witness.

18 THE HEARING OFFICER: Any other  
19 questions? Hearing none. Thank you, sir. You  
20 are excused.

21 THE WITNESS: Thank you.

22 THE HEARING OFFICER: I think this  
23 would be a good time for a ten minute break.  
24 Let's return at 2:40.

25 (REPORTER'S NOTE: At this time,

1 2:30 p.m., a recess was taken, after which,  
2 2:48 p.m., the following proceedings were held:)

3 THE HEARING OFFICER: We are back on  
4 the record now. It's about 2:47. And we'll  
5 resume with Mr. McLeod.

6 MR. McLEOD: Thank you. Just because  
7 we are on this heavy topic of modeling we'll go  
8 ahead and shift things around to bring Mr. Luca  
9 DeAngelis to the stand.

10 LUCA DEANGELIS,  
11 was thereupon called as a witness herein, and  
12 after having first been duly sworn to testify to  
13 the truth, the whole truth and nothing but the  
14 truth, was examined and testified as follows:

15  
16 DIRECT EXAMINATION

17 BY MR. McLEOD:

18 Q. Please state your name for the record.

19 A. My name is Luca DeAngelis.

20 Q. Mr. DeAngelis, do you have any university  
21 undergraduate and graduate degrees?

22 A. I do. I have a bachelors of science in  
23 geological engineering from University of  
24 Missouri-Rolla and a masters, MS, in civil  
25 engineering from the University of Kansas.

1 Q. Any professional licenses or certifications?

2 A. I am a registered professional engineer and  
3 registered professional geologist in Kansas. I  
4 am a registered professional engineer.

5 Q. Behind the expert reports tab in the lime  
6 colored notebook if you will flip back to the  
7 words of that section, is there a document?

8 A. Which color?

9 Q. The lime notebook, the green one.

10 A. (Witness reviews documents).

11 Q. Is there a document in that section of the  
12 notebook that looks like your curriculum vitae,  
13 or resume, depending on how you use that?

14 A. I am looking. I don't see it. I may need your  
15 help.

16 MR. McLEOD: May I approach the  
17 witness?

18 THE HEARING OFFICER: Yes.

19 (City Exhibit 15 was marked for  
20 identification by the Reporter.)

21 BY MR. McLEOD:

22 Q. Mr. DeAngelis, is looking at that document that  
23 I have had the reporter mark as an exhibit,  
24 City's 15, what is that document?

25 A. That's my CV or professional resume.

1 Q. Did you have a personal role in the generation  
2 of that document?

3 A. I did.

4 Q. And in terms of the experience described in that  
5 document, well, let me ask it this way. What  
6 would be the approximate date as of which that  
7 document was generated?

8 A. Within the last few months, I don't know the  
9 exact date.

10 Q. Was the information set forth there about the  
11 extent of your education, training and  
12 experience current as of the time the document  
13 was generated?

14 A. Yes, it was.

15 Q. And since the date that it was generated have  
16 there been any other material projects or work  
17 that you have done that would need to be added  
18 to update that?

19 A. Probably not that would impact or be relevant to  
20 the case.

21 MR. McLEOD: I will offer that document  
22 for admission.

23 THE HEARING OFFICER: Any objections?

24 MR. STUCKY: I guess I am unclear, is  
25 it just the CV of this witness or all the CVs?

1 We are a little unclear.

2 MR. McLEOD: Just the CV of this  
3 witness.

4 MR. STUCKY: No objection.

5 THE HEARING OFFICER: And was this 15;  
6 is that correct?

7 MR. McLEOD: Yes, City 15.

8 THE HEARING OFFICER: City 15 is  
9 admitted.

10 BY MR. McLEOD:

11 Q. Mr. DeAngelis, are you familiar with section 2.4  
12 of the City's proposal Groundwater and Modeling  
13 Set Up 1% Drought Simulation?

14 A. I am.

15 Q. And there are references there to the Equus Beds  
16 groundwater level, which was used for the  
17 proposal analysis. Did you have involvement  
18 during the use of that model for the proposal  
19 analysis in the evaluation of modeling input  
20 parameters, consideration of calibration and  
21 confirmation of results?

22 A. So while I was not the primary modeler I did  
23 have input.

24 Q. What was the extent of that input?

25 A. So I primarily assisted the primary modelers on



1 the project in evaluating the calibration status  
2 and also providing internal QAQC and then  
3 evaluation of the process used to evaluate.

4 Q. So for the record, what is the abbreviation for  
5 QAQC?

6 A. Quality assurance and quality control.

7 Q. So you were, in a sense, a significant sense, a  
8 peer review person assisting with the  
9 calibration and other issues of the modeling?

10 A. Yes, that's correct.

11 Q. What is a groundwater flow model and how are  
12 they developed?

13 A. So groundwater models are mathematical  
14 approximation of physical systems. They can be  
15 as simple as an equation, and as complicated as  
16 a computer model like, MODFLOW. They are  
17 developed using data that is collected in the  
18 field, those are measurements of water level,  
19 they are measurements of hydro conductivity,  
20 various different parameters that impact the  
21 availability of water to flow through an aquifer  
22 and calibrated, as was discussed in the previous  
23 testimony.

24 Q. Do you agree with the premise that typically the  
25 more site specific data is available the better

1 the model will be at making calculations that  
2 match the physical system?

3 A. Yes. Generally that's correct.

4 Q. What is the purpose of model calibration?

5 A. So model calibration is what you are trying to  
6 do when you are calibrating a model is to  
7 demonstrate that the model is capable of  
8 reproducing observed occurrences within the  
9 aquifer. So be that water level changes or  
10 stream flow measurements, whatever it is that  
11 you are trying to calibrate to, what you are  
12 trying to show and demonstrate is that the  
13 mathematical model that you put together  
14 reasonably approximates the physical system and  
15 measurements that have been made within that  
16 physical system.

17 Q. Have you reviewed the USGS materials that relate  
18 to their use in the work with this groundwater  
19 model?

20 A. I have.

21 Q. Do you know what the USGS estimated as the  
22 largest possible error in measurement of water  
23 level elevations?

24 A. I think they said around five feet.

25 Q. What's the purpose of a groundwater model?

1 A. So I explained what calibration was, which is  
2 demonstrating what has happened in the past, so  
3 no one really builds a model to show what's  
4 happened in the past, they build it to use in  
5 the future. Typically the purpose of a  
6 groundwater model is to predict an aquifer model  
7 to a new stress that will be introduced in to an  
8 aquifer.

9 Q. Please describe the process used to calibrate  
10 the Equus Beds groundwater model and to observe  
11 groundwater elevation measurements.

12 A. So the USGS went through a pretty extensive  
13 calibration process that's documented in their  
14 report. And they first started off with steady  
15 state conditions with no pumping. So steady  
16 state means that things are not changing with  
17 time. And what they did there was reproduced  
18 what they call predevelopment. So essentially  
19 when the aquifer had limited pumping within the  
20 aquifer they will produce that. Those  
21 measurements were pretty old. I think they were  
22 a little bit over 200 measurements available to  
23 do that calibration. The next step that they  
24 did was the transient calibration which takes on  
25 a period, a time period from the late 1930s to

1           2008. And so during that timeframe there is  
2           much more data available, more monitoring wells  
3           available. Obviously things are changing with  
4           time. During that timeframe they changed river  
5           stages and corresponding flows. They changed  
6           climatic conditions, depending on whether it was  
7           a drought or a wet year.

8                         They went through that whole process.  
9           That was the next step, that transient  
10          calibration. While they were calibrating, the  
11          calibrated both heads, the groundwater elevation  
12          and also the stream flows or changes in stream  
13          flow within the Little Ark and also the Arkansas  
14          River.

15         Q.    What were the model calibration goals?

16         A.    The goals that they had were less than 10%  
17                root-mean-squared error. And I think in the  
18                context of the head change across the model,  
19                which is about 200 feet, that translates in to  
20                about a 20 foot maximum head change, further  
21                error.

22         Q.    You were present for the testimony of Dr.  
23                Akhbari this afternoon, were you not?

24         A.    I was.

25         Q.    And although Dr. Akhbari had difficulty

1 generally quantifying a level of error for  
2 calibration, when we looked at a specific well  
3 he identified as a borderline maybe, I believe  
4 that he then answered that his approach to  
5 drawing a line would be less than 10% error.  
6 Does that seem to be consistent with the  
7 approach taken by USGS?

8 A. On a percentage error basis, yes, I think it's  
9 consistent.

10 Q. Describe the results of the steady state  
11 calibration.

12 A. Can you point me to the table number?

13 Q. I think we would be looking at figure 33 of  
14 Scientific Investigations Report 2013-5042,  
15 which would be an Attachment E to the proposal,  
16 which is part of Exhibit 1 in the black binder.

17 A. Black binder. Here we go. All right. So  
18 working backwards. Black binder.

19 Q. Attachment E.

20 A. Okay. (Witness reviews documents). So you  
21 asked about the calibration?

22 Q. Yes.

23 A. That's correct.

24 Q. Yes.

25 A. So that's summarized in table 10, and what they

1 did was to go through and break the model area,  
2 the entire model in to six different areas, and  
3 they developed a calibration error for each one  
4 of those six areas. Those ranged from a  
5 root-mean-square error of 1.4 feet to one that  
6 is about 8.35 feet. And are generally less  
7 than, in all of the other areas less than three  
8 feet. So table 10.

9 Q. Can you tell --

10 THE HEARING OFFICER: Pardon me, what  
11 page can I find table 10?

12 THE WITNESS: 52.

13 THE HEARING OFFICER: Thank you.

14 Q. Looking at the USGS materials, can you tell  
15 whether USGS compared the measured and modeled  
16 potential metric surface to ensure that the  
17 modeled hydraulic gradient was similar to the  
18 observed hydraulic gradient in magnitude and  
19 direction?

20 A. Yes, they did. And that figure I believe is  
21 figure 33, which is on Page 50 of the report.  
22 And so as I stated earlier, calibration of a  
23 model is really a stepwise process building  
24 lines of evidence that state or showed or  
25 demonstrate that the model that you are putting

1 together, the mathematical model, is  
2 representing the physical system.

3 What we have talked about so far today  
4 a lot is numerical errors and percentages and  
5 feet. A graphical depiction is a lot of times  
6 one of the first places we start off as  
7 modelers. We want to make sure that the model  
8 that we are producing reproduces the contours of  
9 the potential metric surface that we are  
10 observing. So this is another level of  
11 calibration that the USGS went through.

12 Q. And turning to figure 35, in that same body of  
13 materials, what does figure 35 relate to?

14 A. So 35, and that's on Page 53, 35 is what we call  
15 a scatter plot of residuals. And so what we are  
16 showing here is simulated groundwater levels on  
17 a Y axis and observe groundwater levels on an X  
18 axis. If you were to draw a straight line,  
19 basically a 45 degree angle from the lower left  
20 hand corner of that chart to the upper  
21 right-hand corner, that line would represent  
22 what we call a line of zero residuals, which  
23 would be a perfect model. So if all the data  
24 points landed on that line, we would have a  
25 model that has zero error in it. As we heard,

1 models that have zero error don't exist.

2 So this is a visual way to represent  
3 the level of error within the model. It shows  
4 the difference between the simulated and the  
5 observed groundwater levels. And like I said,  
6 you want to stay as close as you can to that  
7 line of zero residuals. And this scatter plot,  
8 in my opinion, represents a very good  
9 calibration.

10 Q. Is there a distinction between the level of  
11 water level calibration within the basin storage  
12 area compared to the remainder of the model  
13 domain?

14 A. I think in general, going back to table 10, the  
15 zones that were developed by the USGS are shown  
16 in figure 36, on Page 54, so you can relate  
17 those zones. And it also explained on table 10  
18 as to where they fall. I think in general the  
19 answer to that question is no, except for the  
20 north uplands, which is kind of an outlier in  
21 calibration. Its calibration was not as good.  
22 The rest of the model is well calibrated, and  
23 those values are all approximately the same.  
24 And the basin storage area, calibration is right  
25 there in terms of all the other five areas in



1 terms of numeric calibration status.

2 Q. Please describe the process used to calibrate  
3 the Equus Beds groundwater level model to  
4 observe stream flow measurements.

5 A. Yes. So there are two main streams that were,  
6 or where stream flow was tracked or stream flow  
7 was evaluated within the model. So what the  
8 USGS did is they looked at stream flow  
9 conditions in the Arkansas and the Little Ark.  
10 The results of those are presented also within  
11 the document, and let me find that figure. And  
12 then I will explain what the figure means.  
13 Figure 41, Page 65, and so what this is just the  
14 results of USGS's simulation that show stream  
15 flow pick up, essentially increases or decreases  
16 in stream flow, between measured gauges. So  
17 there are gauges. They are gauged stream flow  
18 locations amongst or within both of these rivers  
19 where they have measured values. The USGS then  
20 goes through and estimates what percentage of  
21 that stream flow is base flow. And so what  
22 percentage what they think is base flow is on  
23 these charts, presented as observed. And then  
24 the other ones, which would be the blue ones,  
25 are stimulated.

1                   So we are looking at comparing model  
2                   predicted base flow values versus observed base  
3                   flow values. And like I said, it's a pick up,  
4                   so it's a change in extreme base flow from one  
5                   gauge to another gauge. Here they are shown as  
6                   losing and in gaining, the Ark is losing. And  
7                   the Little Ark is gaining.

8       Q.   And for the record, when we use the term base  
9            flow in this context, what does it signify?

10     A.   Stream base flow is typically described as a  
11           contribution from groundwater in the stream. So  
12           if you took surface water run off,  
13           precipitation, all the other things that are in  
14           the stream flow, that contribute to the stream  
15           flow, base flow is what is in there at all times  
16           and typically the contribution from groundwater.

17     Q.   And then also in the context of the testimony  
18           you just gave the notion of a gaining or losing  
19           stream, what does that signify?

20     A.   So stream flow, in a gaining stream, the stream  
21           flow is increasing; and the losing stream, the  
22           stream flow is decreasing.

23     Q.   So in a gaining stream, looking at groundwater,  
24           is picking up water from the aquifer?

25     A.   Correct.

1 Q. And the losing stream contributing to the  
2 aquifer?

3 A. That's correct. So the Arkansas is contributing  
4 to the groundwater, and the Little Ark is  
5 receiving base flow.

6 Q. For purposes of model calibration, what's the  
7 percentage value chosen there as an acceptable  
8 ratio of R&S error for simulated base flow to  
9 total range and estimated base flow?

10 A. I believe what they used in the model, USGS used  
11 in the model was 20 percent for the stream flow  
12 calibration.

13 Q. Going to the sub topic of transient model runs,  
14 are variations in climatic conditions considered  
15 in the Equus Beds groundwater model?

16 A. Yes, they are. The Equus Beds simulates both  
17 dry years and wet years. So there are changes  
18 in the climatic conditions of pre charge and  
19 precipitation and then the resulting stream  
20 flows.

21 Q. So variations in river stage and stream flow  
22 they are also considered in the Equus Beds  
23 groundwater model?

24 A. Yes, that's correct.

25 Q. And did those river stages vary during the

1 transient groundwater model simulation based on  
2 the observed average annual river stage at each  
3 stage location?

4 A. Yes, that's correct. So that gives the USGS to  
5 simulate a wet year or a dry year based on  
6 observed data.

7 Q. Please give us your opinion on the adequacy of  
8 the Equus Beds groundwater model for use in  
9 evaluating hydraulic responses during a 1%  
10 drought.

11 A. In my opinion, I think this is very well  
12 calibrated groundwater model that is usable at a  
13 local scale, and is adequate for use in  
14 predicting water levels for a 1% drought.

15 Q. And what can you tell us about the normalized  
16 root-mean-square error in both the steady state  
17 and transient models?

18 A. So, it helps if we go back to that table. Go  
19 back to table 10. Again, all models start off  
20 with a goal in terms of the level of  
21 calibration. The stated goal for this project  
22 was below 10%. Which I believe was 20 feet, if  
23 I remember correctly. And as you can see in  
24 this table, in all the areas the resulting model  
25 calibration is much lower in terms of its error,

1 than what the prescribed goal was or the goal  
2 for the project was as to what the USGS  
3 established. So by that definition the model is  
4 calibrated. Also it is well calibrated based on  
5 modeling procedures. Typically we are shooting  
6 for anywhere between 5% and 10% normalized  
7 root-mean-square. Normalized means it's  
8 averaged out over the head within the model.  
9 The model has about 200 feet of head and these  
10 are all well within that range.

11 Q. And in your opinion, is that model an  
12 appropriate tool, a suitable tool, for  
13 evaluating regional hydraulic responses during a  
14 1% drought?

15 A. Yes, I believe it is.

16 Q. You were present during the testimony of Dr.  
17 Akhbari, and I believe he concurred with your  
18 view that the model is very well calibrated from  
19 the perspective of basin like decision making,  
20 but in his view there were problems attempting  
21 to apply the model to determine changes in water  
22 level at any specific well. Did his testimony  
23 shake your faith in your modeling results or the  
24 validity of those results?

25 A. No. No, it didn't. I think, as we heard

1 earlier, in the table that he developed there is  
2 20 wells. The average error for 11 of those is  
3 two feet. So we are talking about a very small  
4 error within the model. So, no.

5 MR. McLEOD: I don't have further  
6 questions for the witness.

7 THE HEARING OFFICER: Mr. Oleen.

8 MR. OLEEN: No questions.

9 THE HEARING OFFICER: Mr. Stucky.

10

11

CROSS EXAMINATION

12

BY MR. STUCKY:

13

Q. Mr. DeAngelis, is that how you pronounce your  
14 name?

15

A. It depends upon if you want the American or the  
16 Italian version.

17

Q. Which do you prefer?

18

A. DeAngelis is fine.

19

Q. Mr. DeAngelis, just a moment ago Mr. McLeod  
20 asked you some questions about your resume; is  
21 that correct?

22

A. That's correct.

23

Q. Now, where on your resume does it say that you  
24 actually helped to develop a groundwater model?  
25 Have you ever done that?

1 A. I have extensive groundwater modeling  
2 experience, yes.

3 Q. Have you actually ever helped write a  
4 groundwater model?

5 A. Constructive groundwater level?

6 Q. Yes. Help to develop it.

7 A. Many, many times, yes.

8 Q. What groundwater models have you helped  
9 construct as it relates to groundwater?

10 A. Do you want me to list them out?

11 Q. If you could list a few of them.

12 A. You could see on my CV, I will go through some  
13 of the more important ones. So I built  
14 groundwater model for the Nebraska DNR, that's  
15 the blue basin groundwater model. That's a  
16 basin scale model that the Nebraska DNR uses,  
17 still to this date, to determine basin  
18 appropriation status. So they look at stream  
19 flow depletions due to irrigation pumping.  
20 That's one.

21 You will see on the CV I also was  
22 contracted by the Missouri DNR to review the  
23 Ozark aquifer model. That's just a review of a  
24 model.

25 Also on the CV I developed a model for

1           McPherson. So the McPherson groundwater model  
2           was taking this model and carving out a section  
3           and making some changes to it to look at  
4           development of a new well field and a new water  
5           right for the City for McPherson for public  
6           utilities. We also looked at transport of  
7           chlorides in that model.

8                         Developed a second model for the  
9           Nebraska DNR, the lower Platte River tributary  
10          basin model. That model looks at extreme  
11          depletions over time in the eastern third or  
12          quarter of the State of Nebraska, due to  
13          irrigation pumping.

14                        I developed a regional scale  
15          groundwater flow model for the Omaha  
16          metropolitan utilities district. That was for  
17          permitting a new well field that pumps 100  
18          gallons per day, part of an environmental  
19          project that has been ongoing for 15 years. I  
20          have been involved in that groundwater model.  
21          Reviewed by multiple agencies. These are all on  
22          the CV.

23         Q. I will pause you for a moment. Of those models  
24             you just mentioned, were you the primary modeler  
25             on any of those projects?



1 A. On all of them, yes.

2 Q. But with respect to the City's model you are not  
3 the primary modeler, as I understand it?

4 A. For the City of Wichita?

5 Q. For the City of Wichita.

6 A. No, I am not. As previously stated I do QAQC  
7 work.

8 Q. So your work with respect to the City's model  
9 was limited to checking the inputs and doing  
10 basically some double checking of the City's  
11 work? Would that be an accurate statement?

12 A. Generally, yes. I was involved with our group  
13 of hydro geologists, so it's bouncing off ideas,  
14 coming up with ideas, asking questions,  
15 reviewing their work, making sure things  
16 conceptually make sense. Yes. It is QC,  
17 quality type control work, and also being part  
18 of a team and bouncing ideas off making sure  
19 that things make sense, that approaches being  
20 applied make sense.

21 Q. Did you actually help to write any portion of  
22 the City's proposal?

23 A. I did not.

24 Q. Did you actually personally generate any of the  
25 data that was utilized or relied upon in the

1 City's proposal?

2 A. No, I did not.

3 Q. And I think the next question is obvious, as far  
4 as any of the tables, or the spreadsheets that  
5 are in the City's proposal, which is the City's  
6 Exhibit 1, you didn't generate any of that  
7 information; is that correct?

8 A. That's correct. Just QC.

9 Q. Now, just a moment ago --

10 MR. STUCKY: Well, Mr. McLeod, what was  
11 the number of that last exhibit?

12 THE HEARING OFFICER: 15.

13 MR. McLEOD: I think we were up to City  
14 15.

15 BY MR. STUCKY:

16 Q. Now, just a moment ago --

17 MR. McLEOD: Yes. See I have, I have  
18 his expert report was 15.

19 THE HEARING OFFICER: Okay.

20 MR. McLEOD: If you mean the last  
21 exhibit that he was referring to, it's Exhibit  
22 1, the proposal itself, attachment E, part of  
23 the exhibit that he is in.

24 BY MR. STUCKY:

25 Q. I ask that you flip to attachment E of Exhibit

1 1.

2 A. Okay.

3 Q. Now, just a moment ago you were asked questions  
4 about calibration with respect to the City's  
5 model, would that be a fair statement?

6 A. It is.

7 Q. And I think first of all you were asked general  
8 questions about the calibration that was  
9 performed by the USGS; is that correct?

10 A. That is correct.

11 Q. Let me ask you this, were you part of the team  
12 with USGS that initially calibrated the model?

13 A. I was not.

14 Q. Now, with respect to attachment E, this is, in  
15 fact, a relatively lengthy report that was  
16 generated by USGS; is that correct?

17 A. That's correct.

18 Q. Did you help to write any portion of that  
19 report?

20 A. I did not.

21 Q. Did you help to perform any of the calculations  
22 that are relied upon in this USGS report?

23 A. I did not.

24 Q. Have you personally analyzed the data in the  
25 sense that you double checked the work performed

1 by USGS?

2 A. No, I did not.

3 Q. So just so I am clear, your testimony today is  
4 strictly based on you visualizing the tables  
5 that were developed by USGS and interpreting  
6 them for the record? Would that be an accurate  
7 statement?

8 A. Generally, yes. But I have also used as part of  
9 my work at Burns & McDonnell I have been  
10 involved in the Wichita accounting process so  
11 have, you know, have done work with the model  
12 through that. So not specific to this proposal,  
13 but I am familiar with the model. And as I said  
14 earlier, in my CV I have used this specific  
15 model to help build other models. So I have  
16 familiarity with the model. But in terms of the  
17 proposal, no, I have not.

18 Q. So as it relates specifically to the City's  
19 proposal, and it is a relates specifically to  
20 this USGS report you haven't come up with any of  
21 the data; is that correct?

22 A. That's correct, yes.

23 Q. You didn't perform any measurements; is that  
24 correct?

25 A. That's correct.

1 Q. You didn't run any individual calculations; is  
2 that correct?

3 A. That's correct.

4 Q. You didn't generate any tables; is that correct?

5 A. Yes.

6 Q. You didn't come up with any kinds of graphs; is  
7 that correct?

8 A. Correct.

9 Q. And, in fact, you didn't independently analyze  
10 the data that was relied upon in the USGS  
11 report; is that correct?

12 A. What do you mean by independently analyze?

13 Q. Independently verify the data used in the USGS  
14 report.

15 A. I did not, no.

16 Q. So I am going to ask you some questions about  
17 that data, and if you know the answers you can  
18 answer it. Now, just a moment ago you said that  
19 the goal of the USGS report was to have a  
20 root-mean-square error of 10% or less; is that  
21 correct?

22 A. Yes. That was my recollection.

23 Q. Okay. Now, root-mean-square analysis that type  
24 of analysis would generally be applied basin  
25 wide; is that correct?

1 A. It is applied in basin wide problems, yes, not  
2 only to basin wide problems, but, well, that's  
3 correct.

4 Q. As it relates to the USGS report, the 10% error,  
5 in that particular analysis, applied to the  
6 entire region that was being studied; is that  
7 correct?

8 A. It applies to the entire model domain, that's  
9 correct.

10 Q. But if you were to flip through this USGS report  
11 there is not going to be any analysis of any  
12 kind of error that would be determined at  
13 individual monitoring wells; is that correct?

14 A. That is typically not part of the model  
15 calibration.

16 Q. So that would be a correct statement?

17 A. That's a correct statement.

18 Q. Okay. I would ask, and just so we are clear, a  
19 moment ago you referred to a table 10. It's on  
20 Page 52.

21 A. Yes.

22 Q. As you walked through table 10 you indicated  
23 that the percentages of error in the grand  
24 scheme of things, in your opinion, weren't that  
25 major. Is that a simple characterization of

1 your testimony?

2 A. Yes, for all but one area, yes.

3 Q. Which area is that that you think there is  
4 different?

5 A. Well, I don't think there is a significant  
6 issue, it's just an outlier, the north uplands'  
7 calibration, zone 6.

8 Q. In your view with respect to the north uplands,  
9 would that be an acceptable error, in your view  
10 as a modeler?

11 A. It is. It is within their goal, so, yes.

12 Q. Now, just so I am clear, we mentioned the basin  
13 storage area, it mentions the Burrton area, the  
14 Arkansas River, the sand dunes, the south  
15 uplands and the north uplands. Those are  
16 regions within the aquifer; is that correct?

17 A. The regions within the model, yes.

18 Q. Regions within the model. So, in other words,  
19 this doesn't analyze specific monitoring wells;  
20 is that correct?

21 A. Yes. And that's not typically done in the  
22 calibration, but, yes, that's correct.

23 Q. So when the USGS calibrated their particular  
24 model they were looking to see how well, it was  
25 calibrated with a root-mean-square analysis for

1 individual regions, would that be an accurate  
2 statement?

3 A. I think so, yes.

4 Q. And as far as any more specific in depth  
5 analysis at a micro level, rather than a macro  
6 level, the USGS did not perform that work; is  
7 that correct?

8 A. They did not look at specific wells, no, or  
9 individual wells.

10 Q. Now, you also mentioned figure 35 in that  
11 document just a moment ago.

12 A. Okay.

13 Q. Now, with respect to figure 35, as you are  
14 sitting here today, do you have any idea which  
15 well or wells this figure is showing data for?

16 A. It says simulated versus observed ground wells  
17 for transient calibration. So it should be all  
18 wells used in the transient calibration.

19 Q. And you as you are sitting here you don't know,  
20 that's your speculation; is that correct?

21 A. I would say it's an informed yes.

22 Q. Now, why have they normalized the RMS, or  
23 root-mean-square error in this particular  
24 report?

25 A. Normalized root-mean-square is a very standard



1 way to calibrate a groundwater model. And the  
2 reason that you do that is like specific to this  
3 instance, their goal was 10%, 20 feet. And a 20  
4 foot error in a model that has 20 foot of head  
5 change is very significant. And 20 feet of  
6 error in a model that has 200 feet of head  
7 change is less significant. And 20 feet of  
8 error in a model that has 2,000 feet of head  
9 change is even less significant. So that's why  
10 you normalize the error to show what your  
11 average error is within the entirety of the  
12 model.

13 Q. Is that part of the reason why, at least the  
14 USGS model, in its unaltered form is not well  
15 designed to predict what would occur in an  
16 individual well? Is that one of the reasons?

17 A. I would disagree with that statement.

18 Q. Tell me how you disagree with that statement.

19 A. I disagree that you, you said it is not well  
20 designed to predict a water level at a specific  
21 well or something of that order? Yes, I don't  
22 agree with that.

23 Q. But again, the normalized root-mean-square  
24 analysis is generally designed for larger areas;  
25 is that correct? An analysis of larger regions,

1 would that be a true statement?

2 A. Not necessarily. It's a way to relate the  
3 error. So that you can, I mean you have to have  
4 a way, when developing standards and standard  
5 calibration metrics, you have to have a way to  
6 evaluate problems that are on different scales.  
7 So by normalizing that error it allows you to  
8 evaluate your level of calibration for a project  
9 that's over a small scale versus a project  
10 that's over a very large scale.

11 Q. With respect to figure 35, now, there is  
12 numbering of feet. And it says on the left-hand  
13 side, simulated groundwater level and feet  
14 above. What does that last portion mean to you?  
15 NAVD what does that mean?

16 A. Vertical data that was used.

17 Q. Explain what that means.

18 A. There are different vertical data sets that are  
19 used, so the NAVD is the vertical data that's  
20 used for this specific project. So what that is  
21 is the elevation standard, I guess if you want  
22 to call that. It's a surveying term. It's a  
23 way, so similar to like a state plain, or UT  
24 coordinates for XY, NAVD is what we use to  
25 standardize that elevation.

1 Q. Now, although if we look at figure 35, and again  
2 we are talking a difference of hundreds of feet  
3 and the difference is depicted in this figure;  
4 is that correct?

5 A. 300 feet.

6 Q. So we are talking a difference of 300 feet in  
7 this small figure, is that what we are talking  
8 about?

9 A. That's correct.

10 Q. So in analyzing this specific figure, if we were  
11 to zero in, and in a more localized sense, so we  
12 are talking the difference of 50 feet as the  
13 scale here, would that tell you a little more  
14 about the difference between the simulated  
15 versus the actual groundwater levels?

16 A. I mean, the statistics won't change and the  
17 error won't change, but you would be able to see  
18 it if you change the scale, sure.

19 Q. Just reading this figure 35, walk through for me  
20 the differences, numerically, between the  
21 simulated and the observed groundwater levels.  
22 Are you able to do that?

23 A. At a specific well? I mean, if you want me to  
24 pick out a data point, sure, I can do that.

25 Q. Are you able to pick out data points and tell

1 the difference between the simulated versus the  
2 individual observed groundwater levels?

3 A. Approximately, yes.

4 Q. And, but again, you haven't conducted any of  
5 those calculations?

6 A. No.

7 Q. So your approximations would be simply based on  
8 you looking at this graph and trying to estimate  
9 what that difference would be; is that correct?

10 A. Yes, that's correct.

11 Q. Would it be a fair characterization to say that  
12 in a lot of the locations the difference is at  
13 least 20 to 30 feet?

14 A. Some.

15 Q. Okay. Now, you indicated that after the USGS  
16 model was calibrated, that you also did some  
17 analysis of what work the City did to further  
18 calibrate that model. Is that what your  
19 testimony was?

20 A. No.

21 Q. Okay. So as you are sitting here today, you  
22 haven't done any further work to calibrate this  
23 model as it applies to the City's proposal?

24 A. No, I have not.

25 Q. And, in fact, you have done no analysis in that

1 regard; is that correct?

2 A. That's correct.

3 Q. So your testimony today is limited upon you  
4 interpreting the analysis, or the calibration  
5 analysis, that was performed by USGS; is that  
6 correct?

7 A. That's correct.

8 Q. And so the opinions you rendered just a moment  
9 ago are based upon that specific analysis; is  
10 that correct?

11 A. Yes, and my experience.

12 Q. Okay. You said earlier in your testimony that  
13 the data collected in the field, which was the  
14 actual data, you indicated that that is  
15 generally preferred, is that what your testimony  
16 was?

17 A. I don't remember saying that.

18 Q. Well, let me ask you this. Is data collected in  
19 the field, actual measurements, generally  
20 preferred over a simulated measurement?

21 A. For what purpose?

22 Q. For measuring groundwater levels, for example.

23 A. Sure. I agree with that.

24 Q. So, in a general sense, if the actual data, when  
25 you are measuring groundwater levels, is

1 different than the simulated values for  
2 predicting groundwater levels, would the actual  
3 measurements be preferred over the simulated  
4 measurements?

5 A. If there are actual and simulated then, yes, the  
6 actual would be preferred.

7 Q. Okay.

8 A. And just to clarify that, that is assuming the  
9 same stress conditions.

10 Q. You walked through several figures and you went  
11 through them relatively quickly and I think  
12 another figure that you talked about is figure  
13 41; is that right?

14 A. Well, let me flip to it. (Witness reviews  
15 documents). Yes, I did.

16 Q. Do you have any opinion, as you are sitting here  
17 today, regarding what the difference is between  
18 the percentage of the observed data versus the  
19 simulated data with respect to this particular  
20 graph? Do you have any idea what the average  
21 error was?

22 A. I remember reading that. I think their  
23 calibration target was 20 percent. I know they  
24 were below that. I don't remember the exact  
25 value. I would have to look it up.

1 Q. If I were to tell you that the simulated error,  
2 I am sorry, the error between the simulated and  
3 the actual, if I were to tell you it was 17  
4 percent, would you have a reason to disagree  
5 with that figure?

6 A. I would assume you read it correctly.

7 Q. And although these lines have some level of  
8 parallelism, there is still a wide variance  
9 between the two lines, would you agree with  
10 that?

11 A. Well, so these are, as I said earlier, this is  
12 an observed value, right? When you are  
13 measuring stream flow, you measure the actual  
14 flow in the stream. What they are showing here,  
15 what is the GS is showing here is observed,  
16 actual estimated base flow. So there is error  
17 in the estimated base flow. The difference  
18 between what they have shown as base flow and  
19 simulated flow, like you said, does have a  
20 difference. There is a difference. And the  
21 difference is for the Little Ark relatively  
22 consistent throughout the entire simulation.  
23 But it is important to understand there is  
24 inherent errors even in just the base flow  
25 estimates.

1 Q. In your estimation, based on your experience as  
2 a modeler, and you have been involved in  
3 different models, should the model be corrected  
4 to fix the error shown in this particular graph,  
5 in your opinion?

6 A. I guess it depends. Again, I would go back to  
7 saying the base flow is an estimated value. So  
8 I don't know what the confidence level was in  
9 estimates of base flow. And whether you would  
10 go back and recalculate or change parameters in  
11 the model to close the gap between the simulated  
12 and what's presented as observed would really  
13 depend on the level of certainty in that base  
14 flow analysis.

15 Q. Have you done any of those analyses?

16 A. I have not done analyses on this project, no.

17 Q. With respect to the difference on that table,  
18 that 17 percent error, in your experience as a  
19 modeler, as you are sitting there today, is that  
20 an acceptable difference in the error?

21 A. I have developed models that tracks stream flow  
22 that have error that high or higher, yes, I  
23 think it's acceptable.

24 Q. Does root-mean-square error common to be  
25 calculated temporally or spatially?



1 A. It's generally a spatial value.

2 Q. And so if it's a spatial value, that's a value  
3 where one combines a number of different wells;  
4 is that correct?

5 A. Yes, that's correct.

6 Q. Versus temporal where you are looking for an  
7 entire time period of one well, is that the  
8 difference?

9 A. I believe so.

10 Q. And so your testimony just a moment ago is that  
11 this model was designed to be a spatial  
12 analysis; is that correct?

13 A. No, not really. The model is designed to, by  
14 definition it is a transient model, so it has  
15 temporal variations in it.

16 Q. To determine whether or not there is an  
17 acceptable error, the model relies upon the  
18 root-mean-square error; is that correct?

19 A. That's their primary method for calibration, it  
20 is not their only method for calibration.

21 Q. At least as it relates to the root-mean-square  
22 error, that's looking at a spatial analysis; is  
23 that correct?

24 A. That's correct.

25 Q. As you are sitting here today, what additional

1 analysis, from a statistical perspective, was  
2 performed by the USGS to ensure that the model  
3 was calibrated to analyze levels at individual  
4 wells?

5 A. As I stated before, I didn't work on the USGS  
6 project, so I can't answer that. I don't know  
7 what the USGS did.

8 Q. And as you are sitting here today, what analysis  
9 did the City of Wichita perform, or any of the  
10 consultants for the City of Wichita, what  
11 analysis did they do to ensure that the error  
12 was acceptable at individual wells?

13 A. I am not aware of any.

14 Q. Just a moment ago Dr. Akhbari talked about why  
15 the model can be problematic as a tool for  
16 analyzing levels at individual wells. Do you  
17 recall that testimony?

18 A. I do.

19 Q. So based on the fact that you have no idea what  
20 USGS did in that regard, and you don't have  
21 knowledge of whether or not the City of Wichita  
22 analyzed that, and additionally, you didn't  
23 perform that analysis yourself, as you are  
24 sitting here today, you don't have reason to  
25 disagree with Dr. Akhbari's testimony in that

1           regard; is that correct?

2       A.    No, I don't agree with his testimony, so I do  
3           have reason to disagree with it.

4       Q.    And that opinion is based on just your 20,000  
5           foot view that his specific analysis was  
6           incorrect, even though you haven't performed any  
7           of that analysis yourself?

8       A.    I have reviewed his analysis, I also reviewed  
9           what USGS has done.  And the USGS they looked at  
10          trends in their hydrographs, so if you are  
11          talking about specific wells, they didn't  
12          quantify, statistically, that there were some  
13          statistical metric they were trying to meet at  
14          specific wells, but they talked about the trend  
15          analysis and the fact that their water levels  
16          simulated and observed generally had the same  
17          pattern.  And I would go back to previous  
18          testimony where it was quantified that 11 out of  
19          20 wells are within two feet on average and  
20          then, you know.

21      Q.    I will ask that you flip to Page 72 of that  
22           document in front of you.

23      A.    (Witness complies).

24      Q.    Now, toward the middle of, well, there is on  
25           Page 72 there is a summary called Model

1           Limitations, would you agree with that?

2       A.    Yes.

3       Q.    Now, in the Model Limitations, I would ask that  
4           you read numerical model limitation Number 2.

5       A.    The groundwater flow model was districtized  
6           using a grid with cells measuring 400 feet by  
7           400 feet. Model results were evaluated on a  
8           relatively large scale, and cannot be used for  
9           detailed analysis, such as simulated water level  
10          drawdown near a single well.

11      Q.    Do you agree with that statement as far as that  
12          statement being made by USGS, would you agree  
13          that they made that statement?

14      A.    They did make that statement.

15      Q.    And do you have reason to disagree with USGS in  
16          making that statement?

17      A.    No, I don't have any reason to disagree with it,  
18          but I believe that they are talking about  
19          specifically water levels in pumping wells.  
20          That's my interpretation of that limitation.

21      Q.    As you are sitting here today, can you  
22          demonstrate or prove to me that's what's being  
23          referred to in that statement?

24      A.    I cannot prove that, no.

25      Q.    Which circles back that to my question earlier,

1 as far as independent analysis or independent  
2 research or independent data collection or  
3 independent modeling, based on that alone, you  
4 don't have reason to doubt what Dr. Akhbari said  
5 just a moment ago with respect to his analysis  
6 with respect to individual wells; is that  
7 correct?

8 A. Again, I will say I don't agree with how it was  
9 presented, no.

10 Q. But you don't have any reason to disagree with  
11 the way that he went about his analysis,  
12 correct?

13 A. I do, yes, I do. I provided comments on his  
14 analysis. So, yes, I don't totally agree with  
15 his analysis.

16 Q. Let's walk through your concerns. What was  
17 your, what's one of your principle concerns with  
18 his analysis?

19 A. As I discussed earlier, the table that was  
20 generated shows an average error and a maximum  
21 error and never shows a minimum error; but the  
22 average error is two feet in 11 out of 20 wells.  
23 It's three feet in 18 out of 20 wells. So it is  
24 almost always less than three feet of error at  
25 all of those wells. What he did not answer,

1           that was asked, was what is a head change and  
2           there is over 100 feet of head change within  
3           those, within the locations of those wells.  
4           There is 115 feet, 120 feet of head change from  
5           the northern most well to the southernmost well.  
6           So you can't look at the results as a specific  
7           well and take that out of context. You can't,  
8           as a modeler, the USGS can't go through and  
9           individually adjust water level elevations and  
10          tweak parameters on a cell by cell basis to get  
11          the model to calibrate at a specific well, while  
12          also maintaining calibration on a regional  
13          scale. That's my principle disagreement. You  
14          can't look at individual wells in getting down  
15          to zero error in those individual wells.

16        Q.    So your concern, and I just want to make sure we  
17              are clear on what you are saying. Your concern  
18              is based on his general conclusion, general  
19              conclusions of his report, is that what your  
20              concern is with, just so I am correct?

21        A.    Yes.

22        Q.    But as far as the calculations he performed to  
23              reach those conclusions, you don't have reason  
24              to disagree with those specific calculations and  
25              the specific modeling that was performed by Dr.

1 Akhbari; is that correct?

2 A. No, I don't have any disagreement with the  
3 calculations.

4 Q. Okay. So as far as the numbers that, and the  
5 percentages that Dr. Akhbari spoke to, you don't  
6 have reason to disagree with any of his  
7 calculations; is that correct?

8 A. I don't disagree with any numerical values, no.

9 Q. I think just a moment ago, if I heard your  
10 testimony correctly, you said that the model is  
11 calibrated for an analysis on a regional scale.  
12 Was that your testimony a moment ago?

13 A. That's correct.

14 Q. So the model is best suited for a regional  
15 analysis, would that be an accurate statement?

16 A. It's a regional scale model, yes.

17 Q. And I think you have likely already answered  
18 some of these further questions I am going to  
19 have for you, I just want to, as I understand  
20 it, you, although ideas may have been bounced  
21 off you at different occasions by some of the  
22 members of the City, and some of the consultants  
23 for the City, as far as analyzing the modeling  
24 done by the City, you didn't help to perform  
25 that modeling; is that correct?

1 A. That's correct.

2 Q. You didn't help to spot check any of the data;  
3 is that correct?

4 A. I spot checked the results; no, but not the  
5 data, that's correct.

6 Q. Did you help double check to ensure that the  
7 inputs were being utilized correctly?

8 A. Yes, I did help with that, yes. That quality  
9 control type work, yes.

10 Q. As it relates to the model, do you have any  
11 opinion, or did you do any analysis with respect  
12 to the model, and how the 1% drought modeling  
13 was performed? And if I were to ask you a bunch  
14 of technical questions in that regard, would  
15 that be your level of expertise?

16 A. No. That would be more appropriate for others.

17 Q. And so as you are sitting here today, you don't  
18 have any opinion on how the 1% drought was  
19 calculated and how that impacted the City's  
20 model. Would that be a true statement?

21 A. That's correct, yes.

22 Q. As you are sitting here today, you don't have  
23 any kind of an opinion whatsoever on some of the  
24 initial inputs that were put in to the City's  
25 model, you didn't help to enter those in; is



1           that correct?

2       A.     Correct.

3       Q.     And you didn't help to perform those  
4           calculations?

5       A.     No, I did not.

6       Q.     So if I were to ask you very specific questions  
7           about the tables in the City's report, you  
8           wouldn't be able to answer those questions; is  
9           that right?

10      A.     No. I mean I understand generally how they are  
11           put together; but, no, not the details.

12      Q.     Are you able to provide, so would it also be  
13           unfair for me to ask you any kind of an opinion  
14           on stream flow and questions with respect to  
15           that, as far as the impacts to stream flow based  
16           on the City's model?

17      A.     Yes, I did not run the model, so, yes.

18      Q.     And you also wouldn't have any opinions on  
19           impairment; is that correct?

20      A.     Correct.

21      Q.     And you also wouldn't have any opinions on the  
22           City's accounting approach; is that correct?

23      A.     Yes.

24      Q.     And you would also not consider yourself an  
25           expert on any kind of simulation errors in the

1 City's modeling; is that correct?

2 A. Correct.

3 Q. And you also would not be able to answer any  
4 kind of questions with respect to water quality  
5 as it relates to the City's model; is that  
6 correct?

7 A. Yes, that's correct.

8 Q. And I am not sure if I asked this, but I think I  
9 asked, I might have asked this, you also can't  
10 answer any questions with regard to whether or  
11 not the City's proposal will impair individual  
12 wells, would that be a true statement?

13 A. Correct.

14 Q. And if I were to ask you a number of questions  
15 about the mechanics of how an aquifer  
16 maintenance credit is accumulated, and things of  
17 that nature, you wouldn't be able to answer  
18 those questions either; is that correct?

19 A. No, that's correct.

20 MR. STUCKY: I don't think I have  
21 further questions for this witness.

22 THE HEARING OFFICER: Okay. Ms.  
23 Wendling.

24

25

CROSS EXAMINATION

1 BY MS. WENDLING:

2 Q. I would like to draw your attention back to the  
3 limitations on Page 72 of the USGS report.  
4 Which is the attachment to Exhibit 1, the City's  
5 Exhibit 1, attachment E, Page 72. You have read  
6 or looked at model limitation number 2.

7 A. Yes, I see it.

8 Q. And I believe you said something about that your  
9 belief is that that applies to pumping wells.  
10 Can you clarify what you mean by that.

11 A. Yes. This is a model limitation that shows up  
12 in, maybe not all USGS reports but many USGS  
13 reports, specific to the cell size and  
14 attempting to use the drawdown to make any kind  
15 of analyses of the drawdown in a pumping well.  
16 That typically has been how that disclaimer has  
17 been applied.

18 Q. What is a pumping well?

19 A. A well that pumps water.

20 Q. Which would be most wells?

21 A. If they aren't monitoring wells or observation  
22 wells, sure.

23 Q. If I rely on a domestic well or for my sole  
24 source of drinking water, I rely on a pumping  
25 well?

1 A. That's correct.

2 Q. And this limitation says it can't be used for  
3 what will happen with a pumping well?

4 A. So it means you can't use the water level  
5 calculated in that model cell to tell you what  
6 the water level is going to be in the, in your  
7 well itself. Because of the size difference.

8 Q. Okay. Mr. Stucky asked you several questions on  
9 your work on the proposal.

10 A. Yes.

11 Q. Have you read the City's proposal?

12 A. Yes.

13 Q. So you are familiar with what they are  
14 requesting?

15 A. Yes, I did QAQC work on it.

16 Q. What you describe the QAQC work, you provide a  
17 lot of information about what the USGS did in  
18 terms of their calibration as documented in the  
19 USGS report. Can you describe what you worked,  
20 what work you performed as QAQC work.

21 A. Sure, it was typically looking at model input  
22 files, model output files, primarily though it  
23 was evaluating concepts. So meeting with the  
24 other hydro geologists on the project team and  
25 discussing concepts, how the accounting should

1 occur, how the accounting could occur, reviewing  
2 intermittently model results to make sure the  
3 model results makes sense, things like that.  
4 And reviewing documentation in the proposal in  
5 written form. So performing an editorial type  
6 review.

7 Q. And do you have a standard QAQC process?

8 A. Our company does, yes.

9 Q. Is that process documented?

10 A. It is.

11 Q. Was that process followed?

12 A. Yes.

13 Q. Were there any deviations from your standard  
14 process?

15 A. Not that I can recall.

16 Q. The calibration described in the USGS report  
17 referred to, that was done prior to the report  
18 being drafted; is that correct?

19 A. Can you restate that?

20 Q. So you described the calibration from the USGS  
21 report 2013-1542.

22 A. Yes.

23 Q. That calibration would have been done before the  
24 report was published?

25 A. Yes, that's correct.

1 Q. To your knowledge has the model been calibrated  
2 since that point in time?

3 A. I don't think it has.

4 Q. When, in your experience, is it appropriate to  
5 recalibrate a model?

6 A. I guess it depends, maybe if you are going to  
7 apply the model for a different purpose than  
8 what it was intended for, or perhaps if you  
9 accumulated significant amounts of new data.

10 Q. And do you have a way of quantifying a  
11 significant amount of new data?

12 A. Not really. It's different on every instance.  
13 I mean, typically you would only recalibrate if  
14 you have a new purpose for the model in mind.

15 Q. Are you familiar with the work done by the City  
16 of Wichita and Burns & McDonnell with the USGS  
17 report after this publication?

18 A. Which work specifically?

19 Q. Will you refer to the proposal, Exhibit 1, Page  
20 2-7.

21 A. Yes. (Witness reviews documents). Is that  
22 something you want me to look up?

23 Q. Yes, please. So Exhibit 1, which is the  
24 proposal, Page 2-7.

25 A. 2-7. Okay.

1 Q. And in the second paragraph, midway point:  
2 Since publication of the model Burns & McDonnell  
3 has updated the model since the years 2009  
4 through 2015 and continues on.

5 A. Yes, I am familiar with that work, yes.

6 Q. Any of the work described in this paragraph was  
7 it, is it your belief that recalibration would  
8 have been necessary after those changes?

9 A. No, not necessarily.

10 Q. How do you come to that conclusion?

11 A. So the USGS report was developed with the  
12 intention to come up with an accounting  
13 mechanism for ASR credits and the model was used  
14 to implement an accounting mechanism for ASR  
15 credits. So all you are really doing at this  
16 point in time, nothing has changed hydraulically  
17 within the aquifer, so all you are really doing  
18 is using the model that was calibrated for the  
19 purpose that it was developed for.

20 Q. So if the model is now being used to identify to  
21 propose new lowered minimum index levels, would  
22 that not be a different purpose than calculating  
23 recharge credits?

24 A. It's very, very similar. I still don't think  
25 anything significantly has changed within the

1 basin that would require calibration or  
2 recalibration.

3 Q. So a change in purpose in this case is not  
4 necessarily dictating a recalibration?

5 A. Well, we are still using the model for the same  
6 purposes. Even though the water levels have  
7 lowered, or potentially lowered, it's still the  
8 same accounting process. So really not a  
9 different purpose.

10 Q. So determining a new minimum index level,  
11 determining a water level is the same as an  
12 accounting process?

13 A. Well, it's part of that accounting process, so  
14 yes.

15 Q. Can you explain to me the correlation between  
16 accumulating a credit and a lower water level.  
17 I am not following you at all.

18 A. I mean, so the '93 levels is the base for  
19 withdrawal, right? So it's just the correlation  
20 is the lower, the lower water level is the more  
21 credits you would accumulate. We are not really  
22 proposing, fundamentally the model is not  
23 changing, we are not using the model for a new  
24 purpose. Like I said earlier, if you are going  
25 to change the purpose of the model, the model is



1 built for something, calibrated for something,  
2 and you use it for that purpose, I don't see a  
3 mandate or requirement to recalibrate it.

4 Q. So the purpose again of the model is an  
5 accounting methodology, and I want to look at  
6 the impact in the aquifer to water level in  
7 somewhat detailed level you believe still the  
8 model is fit for that purpose?

9 A. Yes, it's still fit for that purpose, yes.

10 Q. Have water levels historically drawn down to the  
11 proposed minimum index level?

12 A. I don't know the answer to that in detail. I  
13 know some, yes.

14 Q. Some have gone down to the newly proposed level?

15 A. No, the '93 is still lower levels, so not to my  
16 knowledge.

17 Q. So to your knowledge the water levels have never  
18 dropped below the '93 levels?

19 A. Not to my knowledge. And again, that is outside  
20 of my, I don't know all of the historical  
21 record.

22 MS. WENDLING: I have no further  
23 questions.

24 THE HEARING OFFICER: Mr. McLeod.

25 MR. McLEOD: Yes.

1 REDIRECT EXAMINATION

2 BY MR. McLEOD:

3 Q. Mr. DeAngelis, the kind of well by well  
4 calibration that has been suggested by Dr.  
5 Akhbari, is that the sort of a calibration  
6 that's typically done?

7 A. No.

8 Q. And I think you alluded to this somewhat, but  
9 what is the reason why it isn't typically done?

10 A. So the model consists of hundreds of thousands  
11 of cells, and parameters are brought in by  
12 groups based on geology, based on the  
13 information that we have about the area. And  
14 what he is suggesting would require cell by cell  
15 manipulation of parameters to reduce error. And  
16 it's really, frankly, frowned upon in the  
17 modeling world to do that.

18 Q. Are you aware of an industry standard, and you  
19 testified about what USGS used as their target  
20 room for error, are you aware of another  
21 industry standard that is considered a standard  
22 for when a model is calibrated?

23 A. Yes. There is ASGM has a protocol for a model  
24 calibration. There is well documented textbook  
25 groundwater modeling by Anderson and Woessner,

1           1992. Professor Anderson is a professor at the  
2           University of Kansas now, that establishes  
3           numerical calibration targets. Those targets  
4           are typically between five to 10% normal root  
5           square error. They go through other calibration  
6           processes.

7           Q. And would those calibration standards, in your  
8           opinion, be equally applicable to an academic or  
9           industrial exercise where the model is going to  
10          be used for a decision making purpose?

11          A. I think they are equally applicable, yes.

12          Q. Would you ever try to calibrate a groundwater  
13          model beyond the maximum measurement error?

14          A. Generally, no, I would not. I would not say  
15          never, but generally in practice I will not.

16          Q. Why not?

17          A. Because that implies a level of modeling  
18          precision beyond the accuracy of the data that's  
19          used to build the model.

20          Q. And to be clear, Mr. DeAngelis, when you said  
21          water levels had not dropped below the 1993  
22          levels, to your knowledge was that because that  
23          question has not been within the scope of your  
24          review?

25          A. That is correct.

1 Q. So it would be the case that you don't really  
2 know one way or the other as to that?

3 A. As I said, I am not entirely familiar with the  
4 historical record.

5 Q. If the model were calibrated on a well by well  
6 basis, and given the impacts that you have  
7 indicated, that would entail with manipulation  
8 of parameters index by index, would that mean by  
9 that exercise of trying to calibrate well by  
10 well you would then destroy the calibration of  
11 that model for the purposes of a basin wide use?

12 A. You could, you could severely impact it, yes.

13 MR. McLEOD: I don't have further  
14 questions.

15 THE HEARING OFFICER: Mr. Oleen.

16 MR. OLEEN: No questions.

17 THE HEARING OFFICER: Mr. Stucky.

18 MR. STUCKY: Thank you.

19

20 RE CROSS EXAMINATION

21 BY MR. STUCKY:

22 Q. Just a moment ago you said that if the model was  
23 calibrated to manipulate parameters cell by cell  
24 that could destroy the model for the purpose of  
25 analyzing basin wide trends; is that correct?

1 A. It could impact it for sure.

2 Q. Let me ask this. Could you calibrate two  
3 different models essentially, one that's  
4 calibrated for the individual cells, and one  
5 that's calibrated for the basin wide area, is  
6 that something that could happen?

7 A. It's something that could happen, it's not  
8 something that will be normal.

9 Q. So just because you destroy the model for a  
10 basin wide determination, because you are  
11 analyzing the individual cells, doesn't mean you  
12 couldn't have two different models; is that  
13 correct?

14 A. You could build two different models, but if you  
15 have to, if by modeling and manipulating  
16 individual cells you disrupt the overall  
17 groundwater flow field, then you really have to  
18 take a hard look at what you are doing on a cell  
19 by cell basis to justify whether that's  
20 accurate.

21 Q. Do you have, from a decision making standpoint  
22 or logistical standpoint as you are sitting here  
23 today, do you have any knowledge as far as why  
24 the City hasn't calibrated this model to analyze  
25 individual cells?

1 A. I do not.

2 Q. But just to be clear, theoretically it could be  
3 done; is that right?

4 A. Theoretically it could be done.

5 Q. Just a moment ago I walked through some things  
6 with respect to the City's proposal and asked if  
7 you had an opinion on, I just want to ask you a  
8 few more of those.

9 Do you have any opinion on the  
10 methodology for coming out with proposed  
11 contingencies in the City's model?

12 A. I do not.

13 Q. Do you have any opinion with regard to what the  
14 remaining saturated thickness would be at the  
15 end of an eight year drought?

16 A. If I remember right, high 80s low 90s typically  
17 on percentage.

18 Q. If I were to ask you very technical questions  
19 about numbers, you wouldn't have an expert  
20 opinion on that; is that correct?

21 A. I would have to look at the tables.

22 Q. Is that something that you generally are  
23 qualified to generate an expert opinion as you  
24 are sitting here today?

25 A. I am a hydro geologist, so I guess, yes.

1 Q. Is that something that you specifically  
2 analyzed?

3 A. Not in detail. Like I said before, I have done  
4 QAQC work on this and have been involved in the  
5 process, but I did not look cell by cell or well  
6 by well or what the saturated thickness was.

7 Q. You would have to perform further analysis to  
8 provide an answer to that?

9 A. I believe I would have to look at the table,  
10 yes.

11 Q. And you didn't perform any kind of calculations  
12 or analysis with respect to evapotranspiration;  
13 is that correct?

14 A. Yes, that's correct. We did not change the way  
15 that evapotranspiration was simulated other than  
16 just to adjust based on more up-to-date  
17 precipitation values.

18 Q. I heard your testimony a moment ago and I just  
19 want to make sure I understand. You were saying  
20 that when we look at a difference of two feet at  
21 an individual well, I think what your testimony  
22 was that in the grand scheme of things that's  
23 not that significant, is that what you were  
24 trying to say?

25 A. In a way, yes. It's not that it's not

1 significant, but it's not a huge deal when you  
2 are looking at an area where the water level  
3 changes by over 100 feet.

4 Q. If it's a two foot difference and the total  
5 historical fluctuations have only been four  
6 feet, is that two foot difference then  
7 significant in that context?

8 A. It's significant in the historical record of  
9 fluctuation, sure. But if you frame it on the  
10 saturated thickness of the aquifer, which is 150  
11 to 200 feet, it's not. So it depends how you  
12 look at it.

13 Q. So again, it depends on whether or not we are  
14 looking at an average over the entire aquifer or  
15 if we are looking at an analysis with respect to  
16 a specific well. Would that be a true  
17 statement?

18 A. That's a fair statement.

19 MR. STUCKY: No further questions.

20 THE HEARING OFFICER: Ms. Wendling.

21 MS. WENDLING: No further questions.

22 THE HEARING OFFICER: Mr. McLeod.

23 MR. McLEOD: Only just a few very.

24

25 FURTHER REDIRECT EXAMINATION



1 BY MR. MCLEOD:

2 Q. Mr. DeAngelis, you indicated to counsel's  
3 questions two models, one calibrated for the  
4 basin area, one well by well are possible but  
5 not normal. Why would that approach not be  
6 normal?

7 A. For a number of reasons. So to have one model  
8 and another model, then you would have to have  
9 any changes that are made in one model would  
10 then have to be made in another model to make  
11 sure that the changes are valid. It's not  
12 typical. I have over 20 years of practice and I  
13 have not seen it done. But really, if you are  
14 going to make a change in one model, it has to  
15 be hydraulically and hydro geologically  
16 justifiable. So you would want to carry over,  
17 even if it is on a small scale, carry that  
18 change over to the big model and find out what  
19 that does. And there is no physical leakage in  
20 MODFLOW, so we don't have to physically leak the  
21 models, or at least we didn't use to when this  
22 model was built. It was just an atypical thing  
23 to do.

24 Q. And you agreed with counsel that theoretically  
25 you could, you could build a model, calibrate it

1 well by well, you agreed theoretically it could  
2 be done. Would you ever recommend to a client  
3 of your consulting firm that they calibrate a  
4 model on that basis?

5 A. I believe there were over 350 wells in this  
6 model, so I would not advocate for that, no.

7 Q. Are there additional reasons why you would not,  
8 other than the number of wells?

9 A. So the purpose of a groundwater model is really  
10 to look at the overall flow in a basin. And to  
11 do that you need to have statistical metrics  
12 that look at the overall system. Can you in  
13 addition to that add something like that? Sure,  
14 you could. Again, I wouldn't advocate for it  
15 because the number of wells really makes it  
16 problematic. There are only a certain number of  
17 parameters we can adjust in a model and making a  
18 change to those model, parameters need to be  
19 justified based on a physical reason, and every  
20 change has an unintended reaction. So it would  
21 become a very difficult exercise to balance  
22 those micro changes with the macro and make sure  
23 that you get the macro right.

24 Q. In response to one of counsel's questions, you  
25 indicated that you didn't change any values for

1           evapotranspiration, just had updated some  
2           precipitation values. What is  
3           evapotranspiration?

4       A.    So evapotranspiration is just a loss in the  
5           groundwater from evaporation or from  
6           transpiration, which is the root zone pick up of  
7           the plants.

8       Q.    And in an aquifer with groundwater where the  
9           water you are looking at the underground  
10          reservoir, if you will, is subsurface, what  
11          assumptions are usually made for  
12          evapotranspiration?

13      A.    Penetration depths, so the depth with which that  
14          evapotranspiration stops is probably the  
15          principal assumption.

16      Q.    And one factor in that assumption is that the  
17          water is underground, it's not exposed to wind,  
18          sun, weather; is that correct?

19      A.    Correct.

20      Q.    And what's the other factor that relates to what  
21          the appropriate depth is in determining an  
22          assumption?

23      A.    Root zone penetration.

24      Q.    How far the plants go down?

25      A.    Yes.

1 Q. And what is the common level below which you  
2 assume you know about the evapotranspiration?

3 A. I believe it was ten feet in this model.

4 Q. And there was no reason in analyzing this basin  
5 area to make any departure from that, was there?

6 A. There was not, no.

7 MR. McLEOD: I don't have any further  
8 questions.

9 THE HEARING OFFICER: Mr. Oleen.

10 MR. OLEEN: No, Madame Officer.

11 MR. STUCKY: Just one question.

12

13 FURTHER RECROSS EXAMINATION

14 BY MR. STUCKY:

15 Q. You said that with respect to calibrating the  
16 model to examine individual wells, I think that  
17 you said there is over 300 wells, so that would  
18 be a difficult process. Was that your  
19 testimony?

20 A. That's part of the testimony, yes.

21 Q. Could that process be automated?

22 A. Partially, yes.

23 MR. STUCKY: No further questions.

24 THE HEARING OFFICER: Ms. Wendling.

25 MS. WENDLING: No further questions.

1 THE HEARING OFFICER: Any other  
2 questions for this witness? Okay, seeing none,  
3 sir, you are excused.

4 THE WITNESS: Thank you.

5 THE HEARING OFFICER: It's about 4:15.  
6 Do we want to begin the next witness, Mr.  
7 McLeod?

8 MR. McLEOD: I would say the next  
9 witness probably will not be a long witness, but  
10 I don't think we would be able to get through  
11 his testimony in that amount of time either.

12 THE HEARING OFFICER: Our landlord  
13 needs us out of here in about 20 minutes.

14 MR. BOESE: Could we go off the record?

15 THE HEARING OFFICER: Off the record.

16 (A short off-the-record discussion  
17 was held at this time.)

18 THE HEARING OFFICER: Back on the  
19 record. And Mr. McLeod will proceed within the  
20 time we have left today.

21 MR. McLEOD: City will next call Mr.  
22 Don Henry.

23 DON HENRY,  
24 was thereupon called as a witness herein, and  
25 after having first been duly sworn to testify to

1 the truth, the whole truth and nothing but the  
2 truth, was examined and testified as follows:

3  
4 DIRECT EXAMINATION

5 BY MR. McLEOD:

6 Q. Please state your name for the record.

7 A. My name is Don Henry.

8 Q. Mr. Henry, do you hold any degrees from  
9 universities or technical schools?

10 A. Yes, I do. I have a bachelor of science in  
11 biology from Mid Western State University in  
12 Wichita Falls, Texas. And it also includes a  
13 minor in interdisciplinary sciences.

14 Q. Do you maintain any professional licenses or  
15 certifications?

16 A. I have a certification in public administration  
17 through Wichita State University. And I am a  
18 registered Public Health Sanitarian through the  
19 Joint Credentialing Committee of Sanitarians and  
20 Kansas Environmental Health Association.

21 Q. Are you employed?

22 A. Pardon me?

23 Q. Where are you employed?

24 A. I am the assistant director of public works and  
25 utilities for the City of Wichita, Kansas.

1 Q. How long have you been with the City of Wichita?

2 A. Since 1998.

3 Q. What positions have you held with the City  
4 during the timeframe from 1998 to present?

5 A. I have been the assistant director since 2011,  
6 from 2007 to 2011 I was the division manager of  
7 the Environmental Health Division. Prior to  
8 that I was supervised the water quality section  
9 for the joint City County Health Department and  
10 prior to that I was an environmental health  
11 inspector.

12 Q. What functions of the utility are under your  
13 supervision in your current role?

14 A. I provide senior management level support for  
15 the water and wastewater utilities for storm  
16 water management and for the portions of  
17 environmental health that involve groundwater  
18 remediation and groundwater protection,  
19 specifically the permitting and regulation of  
20 personal use and lawn and garden, private and  
21 domestic wells, in other words.

22 Q. Is protection and plumbing division under your  
23 supervision?

24 A. It is. That's part of the water utility, yes,  
25 sir.

1 Q. In the course of your work for the City have you  
2 ever had occasion to deal with water supply  
3 issues?

4 A. Yes.

5 Q. In the course of managing the Wichita water  
6 utilities water treatment activities, do you  
7 have to consider the availability of water from  
8 different sources and supply and also the  
9 quality and chemical characteristics of that  
10 water?

11 A. Yes.

12 Q. Do you have to consider, for supply planning  
13 purposes, which water sources would be reliable  
14 sources during a drought?

15 A. That's an important component, yes.

16 Q. As assistant director of utilities, have you  
17 been involved in meetings, discussions and staff  
18 work relating to city water supply planning and  
19 drought response planning?

20 A. Many of them.

21 Q. Do your responsibilities extend to supervision  
22 of the city staff to perform the modeling  
23 activity to simulate drought response scenarios  
24 and the impact of proposed adjustments to the  
25 City's integrated management of water resources?



1 A. It has included that, yes.

2 Q. In 2011 when you became assistant director of  
3 utilities, was the city experiencing the impact  
4 of a drought?

5 A. Yes.

6 Q. What do you remember about the beginning and  
7 duration of that drought?

8 A. In roughly 2011-2012 Cheney was very stressed,  
9 it fell, I would like a guess here, around 50  
10 percent full at that time. And we were working  
11 through developing a drought response plan, how  
12 we would manage through the drought. And then  
13 it was sometime in 2013 when significant  
14 rainfall refilled Cheney reservoir.

15 Q. Do you recall if during that 2011 and '12  
16 drought, any of the water levels in any of the  
17 index cells in the aquifer fell below the '93  
18 levels?

19 A. Not to my knowledge.

20 Q. Did the City draft some new policy initiatives  
21 because of that drought?

22 A. Drought response plan.

23 Q. Please turn in the purple binder in the document  
24 of Pages 60 and 61 behind the tab drought  
25 response.

1 A. (Witness reviews documents). Just to confirm,  
2 you said 60 and 61?

3 Q. 60 and 61.

4 (City Exhibit 16 marked for  
5 identification by the Reporter.)

6 Q. Mr. Henry, the document that I have had marked  
7 as Exhibit 16, for cleanup purposes, is the  
8 printing that occurs on the back of Page 61 part  
9 of this document (indicating)?

10 A. It is not.

11 Q. And, likewise, the duplex printing that appears  
12 on the back of Page 60, is that part of the  
13 document (indicating)?

14 A. It is not.

15 Q. Okay. And with respect to the pages 60 and 61  
16 themselves, what is the document on those two  
17 pages?

18 A. This is a City of Wichita City Council meeting  
19 agenda report.

20 Q. Dated what?

21 A. October 8th, 2013.

22 Q. Is this a standard form of report that's used to  
23 report agenda items to the Wichita City Council?

24 A. It is.

25 MR. McLEOD: I will offer the exhibit,

1 City 16 for admission.

2 THE HEARING OFFICER: Any objections?

3 Okay. City Exhibit 16 will be admitted.

4 BY MR. McLEOD:

5 Q. Mr. Henry, does it appear from this report that  
6 a plan was revised after an earlier version was  
7 considered in the proceeding, and deferred for a  
8 week?

9 A. Yes, it does. The agenda refers to unfinished  
10 item, this would be a follow-up. And it also  
11 says on October 1st, 2013, the city staff  
12 presented a proposed a drought plan and  
13 ordinance that included phase implementation of  
14 water reduction strategies over four stages.

15 Q. You have been present, yesterday and today  
16 during the hearing, and seen a discussion of a  
17 lot of pieces of presentations to the City  
18 Council relating to drought. Is this action on  
19 October 8th, 2013, and the components described  
20 in the agenda report representative of the final  
21 version of the drought response plan that the  
22 Council actually approved?

23 A. I believe that to be true, yes.

24 Q. In this version how many stages of drought  
25 response measures were there?

1 A. There were four.

2 Q. What's the first stage of drought response  
3 measures?

4 A. It's a voluntary conservation stage.

5 Q. What would cause it to be triggered and become  
6 operative?

7 A. When a 12 month smoothed average of the  
8 elevations of Cheney Reservoir fell below 90  
9 percent.

10 Q. What's the second stage of drought response  
11 measures?

12 A. There are mandatory restrictions in place for  
13 outdoor watering limiting lawn and garden  
14 watering to one day a week.

15 Q. In that second stage, are there also some  
16 exceptions to the limitations?

17 A. There are. Due to, well, there are businesses  
18 that rely upon outdoor watering for economic  
19 purposes.

20 Q. What would cause that second stage of drought  
21 response measurements to be triggered?

22 A. When the 12 month average of Cheney Reservoir  
23 fell below 70 percent.

24 Q. What was the third stage of drought response  
25 measures?

1 A. The third page includes bans on all outdoor  
2 irrigation, there are some exceptions in stage 2  
3 that remain in place. One thing that I did not  
4 mention is that beginning in stage 2, penalties  
5 for violators would also be put in place. Stage  
6 3 includes also that those penalties would  
7 escalate five fold.

8 Q. So once you are past stage one nothing is  
9 voluntary; is that correct?

10 A. That's right.

11 Q. And what would cause the third stage of response  
12 measures to be triggered?

13 A. When the levels in Cheney fell below 50 percent.

14 Q. What was the final stage of drought response  
15 measures?

16 A. Stage 4 declares a water emergency. It requires  
17 that all outdoor watering is banned, including  
18 those for economic purposes, and then there is a  
19 requirement to cut back 15% on indoor use.

20 Q. Is there any type of customer that would get an  
21 exception from that water stage?

22 A. There are. Hospitals, those that require water  
23 for providing care of individuals and for  
24 emergency purposes.

25 Q. And, Mr. Henry, I think you probably have been

1 following the testimony as we have reviewed in  
2 the past few days, but under the integrated  
3 local water supply plan, since about 1992 or  
4 '93, the City has been drawing the bulk of its  
5 water supply from the Cheney Reservoir as  
6 opposed to groundwater. Is that the reason why  
7 all of these automatic triggers are tied to that  
8 12 months smoothed average at the Cheney  
9 Reservoir?

10 A. Yes, it is, because in order to treat the  
11 drinking water made to standards it requires a  
12 blend of both Equus Beds and Cheney water so  
13 it's critical that we extend the viability of  
14 Cheney as long as possible.

15 Q. And Cheney reservoir, having surface exposure,  
16 it's not just evapotranspiration, there is real  
17 evaporation on the surface of the reservoir, is  
18 that correct?

19 A. Yes.

20 Q. Did the City accept the staff's recommendation  
21 to approve the plan?

22 A. Yes.

23 Q. Are the restrictions in the various stages of  
24 the drought plan intended, when triggered, to  
25 reduce demand on the sources of level at the

1 customer level?

2 A. Yes.

3 Q. What impact is that intended to have on the  
4 viability of Cheney reservoir and the Equus Beds  
5 for water sources during the drought?

6 A. It's intended to extend those resources as long  
7 as possible.

8 MR. McLEOD: Did we admit 16? I think  
9 we did.

10 THE HEARING OFFICER: Yes.

11 BY MR. McLEOD:

12 Q. Turning in the purple binder to the document  
13 that's Pages 2 through 9 behind that drought  
14 response tab.

15 A. (Witness reviews documents).

16 (City Exhibit 17 was marked for  
17 identification by the Reporter.)

18 BY MR. McLEOD:

19 Q. And again, Mr. Henry, for purposes of  
20 housekeeping, the printed material that appears  
21 on numbered page 1, is it part of this document  
22 that's on Pages 2 through 9?

23 A. No, it is not.

24 Q. And, likewise, the printed material that appears  
25 on Page 10 on the reverse of Page 9 is it part

1 of the document 2 through 9?

2 A. No.

3 Q. What is the document marked as an exhibit that  
4 runs from Pages 2 through 9?

5 A. This is a PowerPoint presentation that was  
6 presented to City Council in a workshop for  
7 drought planning.

8 Q. And what's the date of it?

9 A. 26th of February, 2013.

10 Q. So this is a predecessor version of the proposal  
11 and not the final plan that council adopted; is  
12 that correct?

13 A. Correct. This a working document.

14 Q. And basically it's being provided to the City  
15 Council to give them some information to discuss  
16 in a workshop?

17 A. It is to provide them information, and  
18 potentially options, and receive, for staff to  
19 receive further direction from the policy  
20 makers.

21 Q. Looking back at Page 5 within the document, what  
22 was the estimated extension of supply to each  
23 stage of drought response measures as they were  
24 contemplated in the discussion at the time that  
25 this report was prepared?



1 A. For drought stage 1, for the voluntary water  
2 restrictions, it would be .3 months. For stage  
3 2, for the reduction in an outdoor usage, the  
4 extension would be seven months. For stage 3,  
5 which would have banned all outdoor usage at  
6 this point, the extension would have been 21  
7 months. And then for option 4 under the water  
8 emergency, that supply extension would be an  
9 additional five months.

10 Q. After the City Council adopted the final drought  
11 response plan that they did adopt in October,  
12 did the City adjust its MODSIM DSS to simulate a  
13 drought that would take into account the impacts  
14 on Cheney Reservoir of the demand reductions if  
15 this plan were triggered?

16 A. Yes, it is my understanding that the model was  
17 updated to reflect these changes.

18 MR. McLEOD: I will offer this exhibit  
19 for admission.

20 THE HEARING OFFICER: Any objections?  
21 Hearing none, City's Exhibit 17 will be  
22 admitted.

23 BY MR. McLEOD:

24 Q. Mr. Henry, if you will turn in the black binder  
25 and look at table 2-1 in the actual proposal.

1 A. (Witness reviews documents). I am sorry, which  
2 pages?

3 Q. Page 2-1 and table 2-1 that's there.

4 A. Okay.

5 Q. Is that table intended to depict how the planned  
6 reductions and water use increase, as the 12  
7 month average percentage of the Cheney  
8 conservation pool decrease because of the  
9 drought response plan?

10 A. It is.

11 Q. Turning in the purple binder to the May 13th,  
12 2014, document that begins from the tab  
13 strategic planning.

14 A. (Witness reviews documents). Where do I go from  
15 the strategic plan tab?

16 Q. Go back about eight pages (indicating).

17 (City Exhibit 18 was marked for  
18 identification by the Reporter.)

19 A. Are you referring to Page 1 of the water supply  
20 planning document?

21 Q. Yes. Looking at the printed material that is on  
22 the reverse of that page, is that part of the  
23 document?

24 A. No.

25 Q. And, likewise, the printed material that appears

1 on the reverse the Page 4, is that part of the  
2 document?

3 A. No.

4 Q. For purposes of what the document is, on pages  
5 one to four, what is the document, Mr. Henry?

6 A. This was a water supply planning document, a  
7 report that was provided to the city manager  
8 that would have been likely shared with City  
9 Council to inform them and receive further  
10 direction.

11 Q. And as it is stated May 13th, 2014, at this  
12 point the City's drought response plan has been  
13 approved the previous fall; is that right?

14 A. Correct.

15 MR. McLEOD: I will offer the document  
16 for admission.

17 THE HEARING OFFICER: Any objections?  
18 City's Exhibit 18 will be admitted.

19 BY MR. McLEOD:

20 Q. Mr. Henry, in the discussion of design droughts,  
21 on the first page of the document, does the  
22 analysis recognize that Kansas guidelines  
23 require communities to plan for a minimum of 2%  
24 drought that happens roughly every 50 years?

25 A. Yes.

1 Q. Does it also consider the 1% drought similar to  
2 the 1930s dustbowl do occur and have a more  
3 substantial impact on the water supply?

4 A. It does.

5 Q. At the bottom of the page, what does it present  
6 as a potential benefit of planning for a more  
7 severe drought?

8 A. It would reduce the time that customers are  
9 experiencing challenges due to water  
10 restrictions.

11 Q. And primarily when the City has worried in  
12 planning about the restrictions, is our  
13 preference to keep people out of the burden of  
14 those level 3 and 4 restrictions?

15 A. That is correct. It's to avoid those more  
16 severe impacts that would potentially cause  
17 health issues, life safety issues, heavy  
18 economic impact.

19 Q. And which type of drought did the Wichita City  
20 Council select as the design drought for which  
21 city staff should plan?

22 A. That's the 1% exceedance drought.

23 Q. At the time the ASR project was first conceived,  
24 and therefore meaning, ASR Phase I, and demands  
25 existing at that time, how did the City think

1 recharge credits would be used originally?

2 A. Originally the ASR project was conceived for the  
3 credits to be used as part of normal routine  
4 supply.

5 Q. With decreases in demand, and the resulting  
6 revised demand projection, used in the City's  
7 planning, how does the City see the usefulness  
8 of recharged credits now? Or to put the  
9 question as to one of need, when does the City  
10 think the credits would actually be needed as a  
11 source of supply?

12 A. The ASR credits now are critical for drought  
13 protection, and it would be advantageous to save  
14 those as late as possible during the drought.

15 Q. Do you believe that using the 1993 water levels  
16 as the lowest levels of which recharged credits  
17 could be withdrawn, poses a problem for relying  
18 on recharge credits as a supply source during a  
19 long term drought?

20 A. It absolutely does, because as users continue to  
21 pump and draw the aquifer down, modeling has  
22 shown those levels will fall below the '93  
23 levels and the City will have credits that have  
24 been stored that are not available.

25 Q. Has Wichita presented an analysis to DWR and the

1 Equus Beds Groundwater Management District  
2 demonstrating the basis of its concerns for ASR  
3 credit accessibility?

4 A. Yes.

5 MR. McLEOD: We admitted City 18,  
6 didn't we?

7 THE HEARING OFFICER: Yes.

8 BY MR. McLEOD:

9 Q. Please turn to the black binder.

10 A. Okay.

11 MR. STUCKY: Can we go off the record  
12 for just a moment?

13 THE HEARING OFFICER: Yes. Go off the  
14 record.

15 (A short off-the-record discussion  
16 was held at this time.)

17 THE HEARING OFFICER: Back on the  
18 record.

19 MR. McLEOD: I will have the reporter  
20 mark the document as City 19. It is the first  
21 document behind the tab proposal correspondence  
22 in the black binder, document page numbers 1  
23 through 5 behind that tab.

24 THE HEARING OFFICER: What was that  
25 document?

1 MR. McLEOD: City 19.

2 (City Exhibit 19 was marked for  
3 identification by the Reporter.)

4 BY MR. McLEOD:

5 Q. Mr. Henry, the print on reverse of Page 5 is  
6 that part of this document (indicating)?

7 A. No, it is not.

8 Q. As to the other pages of the exhibit, what is  
9 this document?

10 A. This is a letter to David Barfield dated May  
11 24th, 2013. It is signed by Michael G. Jacobs,  
12 Interim Water Resources Engineer for the City of  
13 Wichita.

14 Q. And would you regard it as an official  
15 communication of the City given the authorship  
16 by Mr. Jacobs?

17 A. Yes.

18 MR. McLEOD: I will offer City 19 for  
19 admission.

20 THE HEARING OFFICER: Any objections?  
21 City 19 will be admitted.

22 BY MR. MCLEOD:

23 Q. Mr. Henry, with respect to the point on the  
24 second page of the letter that water levels in  
25 the aquifer could have gone much lower, but for

1 the management changes made by the City to  
2 reduce pumping from the Equus Beds well fields,  
3 what does that have to do with the  
4 appropriateness of the 1993 levels?

5 A. Well, even with the limitations in place,  
6 pumping continues and levels can fall below the  
7 '93 levels.

8 Q. Were those levels simply based on the lowest  
9 recorded water levels at the time the ASR was  
10 permitted?

11 MR. STUCKY: Can I voir dire the  
12 witness just a little bit?

13 THE HEARING OFFICER: Sure.

14 MR. STUCKY: Well, let me ask, did you  
15 do any modeling or analysis to perform, did you  
16 perform any analysis or do any kind of modeling  
17 to determine personally if those water levels  
18 would drop below those 1993 levels?

19 A. No. No, my opinions are based upon water  
20 planning review of other works, developing  
21 strategic plans, so my knowledge has been  
22 provided by others that have done that work.

23 MR. STUCKY: I would ask that those who  
24 have done that work testify as to what those  
25 impacts would be.



1 MR. McLEOD: Modeling will be put on  
2 later. Mr. Henry's management role, and his  
3 understanding of what may happen to water  
4 levels, and the consequence for stranded credits  
5 in a major drought, is really the subject of his  
6 testimony. So I think foundation will be  
7 provided as we go along through the other  
8 witnesses.

9 THE HEARING OFFICER: Any response?

10 MR. STUCKY: Well, we would ask that  
11 the foundation be laid for him to be qualified  
12 to testify on these subjects first before all of  
13 these opinions are entered into the record.

14 THE HEARING OFFICER: I think the  
15 request is reasonable. If Mr. Henry could  
16 please limit to the parameters of the decisions  
17 that he has made or makes, I think that would be  
18 more appropriate.

19 MR. McLEOD: I am assuming that that  
20 line of objections was directed to the document  
21 that was previously admitted without objection  
22 and you are just getting to that a little late?

23 MR. STUCKY: I don't have a problem  
24 with the document itself, but as far as any  
25 opinion as far as what the document means or

1           what the analysis means, unless he has performed  
2           that analysis, I don't want any official  
3           opinions with regard to what those impacts will  
4           be.

5                       MR. McLEOD: Does counsel object to the  
6           general expression by Mr. Henry that the 1993  
7           levels are believed to pose a problem for credit  
8           recovery, or statements that general that are  
9           basis of management strategy a part of the  
10          objection on foundation?

11                      MR. STUCKY: If he is not asked for an  
12          official opinion on whether that will occur. So  
13          if the question is, for example, Mr. Henry, if  
14          we assume that the 1993 levels would drop below  
15          a certain point, would that be something that  
16          would impact the City's planning? I mean, if  
17          it's asked in that way where he is not actually  
18          having to testify to the ultimate conclusion of  
19          what those impacts would be, then we are okay  
20          with that line of questioning.

21                      THE HEARING OFFICER: Mr. Oleen.

22                      MR. OLEEN: I am just weighing in  
23          because I thought we were trying to be more  
24          efficient in, admittedly, taking witnesses down  
25          lines of questioning that might technically be

1 out of order; but to postpone this witness'  
2 testimony to then have some other modeler come  
3 up to appease Mr. Stucky, to then bring this  
4 witness back to answer more questions seems  
5 inefficient in my view. I don't think any  
6 questioning that Mr. McLeod has yet asked of  
7 this witness gets in to the realm of modeling,  
8 technical questions in my opinion.

9 MR. STUCKY: I will clarify. I am not  
10 asking that Mr. McLeod call other witnesses  
11 first. That's not what I am suggesting, that's  
12 not efficient. But I think Mr. McLeod can ask  
13 about perceptions and can ask about conclusions  
14 that will be made by other experts, and ask it  
15 in a fashion that this witness does not have to  
16 make it an official part of his expert  
17 testimony.

18 THE HEARING OFFICER: Mr. McLeod, can  
19 you live within those parameters?

20 MR. McLEOD: I think, but I believe  
21 that with that round of technical lawyerly  
22 discussion we have come to the time.

23 THE HEARING OFFICER: We are now out of  
24 time for the day.

25 MR. McLEOD: Have we had 19 admitted?

1 THE HEARING OFFICER: Yes. 19 was  
2 admitted. And with that, I think we'll recess  
3 for the day. And we'll return at 9:00 a.m.  
4 tomorrow morning. Thank you.

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(Proceedings concluded at 4:48 p.m.)

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**In The Matter Of:**

*State of Kansas - Division of Water Resources  
Kansas Department of Agriculture*

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*City of Wichita's Phase II  
Vol. III  
December 12, 2019*

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STATE OF KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the )  
City of Wichita's Phase II )  
Aquifer Storage and ) Case Number  
Recovery Project in Harvey ) 18 WATER 14014  
And Sedgwick Counties, )  
Kansas. )

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Pursuant to K.S.A. 81a-1901  
and K.A.R. 5-14-3a.

FORMAL HEARING  
Volume III

This matter came on for Formal Hearing  
before the Honorable Presiding Officer Constance  
C. Owen for the Division of Water Resources of  
the State of Kansas, at Halstead, Kansas, before  
Rachelle Smith, a Certified Shorthand Reporter  
of Kansas, December 12, 2019, at 9:06 a.m.

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A P P E A R A N C E S

The City of Wichita Department of Public Works & Utilities appeared by its attorney, Mr. Brian K. McLeod, Attorney at Law, 455 North Main Street, Wichita, Kansas, 67202.

The Division of Water Resources Kansas Department of Agriculture appeared by its attorney, Mr. Aaron Oleen, Attorney at Law, 1320 Research Park Drive, Manhattan, Kansas 66502.

The Equus Beds Groundwater Management District Number 2 appeared by its attorneys, Mr. David J. Stucky and Mr. Thomas A. Adrian, Attorneys at Law, 313 Spruce, Halstead, Kansas 67056.

The Intervenors appeared by their attorney, Ms. Tessa M. Wendling, Attorney at Law, 1010 Chestnut Street, Halstead, Kansas 67056



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P R O C E E D I N G S

THE HEARING OFFICER: Good morning. We are now back on the record. This is day three of the formal phase of the public hearing where the City of Wichita's ASR Phase II Modification Request. It is December 12, 2019, and I believe we are continuing with the City's presentation of witnesses. So, Mr. McLeod.

MR. McLEOD: Yes. So I think Mr. Henry was on the stand, already under oath, and we were going through City's Exhibit 19.

DAN HENRY

CONTINUATION OF DIRECT EXAMINATION

BY MR. MCLEOD:

Q. Mr. Henry, in the exhibit book that's open before you, do you see the letter that we were looking at, I guess prior to the break yesterday, that had been marked Exhibit 19?

A. I see a letter from Mike Jacobs to Mr. Barfield dated May 24th, 2013.

Q. Right. I think that is the one. And to connect us up to where we were, I think we had established this was a letter that Mike Jacobs

1 had sent for the city, to the chief engineer  
2 complaining about some aspects of the City's  
3 current permit conditions, including the 1993  
4 levels, which we have been discussing and how  
5 those were based simply on the lowest recorded  
6 water levels and how they were connected to the  
7 intended purpose of the ASR I to maintain that  
8 hydraulic barrier to the Burrton chloride plume.  
9 And we should be on the fourth page of the  
10 letter. With respect to the point on the fourth  
11 page of the letter the limiting recovery of  
12 credits below the 1993 levels was originally  
13 tied for the purpose of preventing dissipation  
14 of that hydraulic barrier, which ASR Phase I was  
15 intended to place in the Burrton chloride plume.

16 What does that complaint, that Mike  
17 Jacobs is making there, have to do with the  
18 appropriateness of the 1993 levels for ASR Phase  
19 II facilities?

20 A. Right, well, the primary purpose of the Phase I  
21 infrastructure was to create the hydraulic  
22 barrier. The Phase II portion of the project  
23 was not necessarily addressed to the hydraulic  
24 barrier and the main intent was to supply  
25 additional supply of water.

1 Q. And then what was the next complaint or point  
2 that Mr. Jacobs raised in that letter as to use  
3 of the 1993 levels, even for the ASR Phase I?

4 A. Mr. Jacobs noted, or he stated that it should be  
5 noted, that water levels in the barrier area can  
6 experience significant declines during dry or  
7 drought periods, even without the removal of  
8 recharged credited from ASR Phase I wells.

9 Q. And that would be tied to the 1993 index levels,  
10 they don't prevent anyone else from pumping  
11 their base rates, do they?

12 A. Not to my knowledge.

13 Q. And they don't prevent the City from pumping its  
14 base rights, correct, only credit recovery?

15 A. Correct.

16 Q. With respect to that purpose of the ASR Phase I  
17 as a mechanism to slow the migration of the  
18 Burrton chloride plume, is that the reason why  
19 the City's current proposal is not seeking to  
20 change the existing low index levels for the ASR  
21 Phase I facilities, or to allow recovery of AMCs  
22 from the ASR Phase I wells?

23 A. It is. The benefits of the barrier is to  
24 protect that water quality should remain in  
25 place.

1 Q. As part of the intent of the requested permit  
2 modifications to facilitate utilization of ASR  
3 recharge credits less frequently because the  
4 revised lower index levels would be thought to  
5 allow the City more time to wait until later  
6 years of the drought before it has to draw  
7 credits or lose access?

8 A. Absolutely. We want to avoid taking credits  
9 unnecessarily during temporary dry spells or  
10 shorter periods of drought.

11 Q. Is part of the intent of the requested permit  
12 modifications to enable the City to maintain the  
13 aquifer in a fuller condition because the AMCs  
14 would allow the City to accumulate credits  
15 without having to deplete the aquifer to enable  
16 physical recharge?

17 A. Absolutely.

18 Q. Mr. Henry, to be clear though, both of these  
19 modifications are requested in the City's  
20 proposal, are they conceptually separate to the  
21 extent that the Hearing Officer could approve  
22 one proposed modification and not the other?

23 A. They are.

24 Q. Please turn in the purple binder to the tab  
25 water levels and behind that tab, USGS

1 Scientific Investigations Report, 2016-5165.

2 THE HEARING OFFICER: I am sorry where  
3 is the document?

4 MR. McLEOD: Purple binder behind the  
5 tab water levels. I think it may actually, I  
6 could have just said the back of the purple  
7 binder. I think it's the only document there.

8 (City Exhibit 20 was marked for  
9 identification by the Reporter.)

10 MR. McLEOD: I will offer it for  
11 admission of a government document.

12 THE HEARING OFFICER: Any objection?  
13 Hearing none, City 20 will be admitted.

14 BY MR. McLEOD:

15 Q. Mr. Henry, turning back to the table of Page 9  
16 of that report.

17 A. Okay.

18 Q. Does the bottom line of the data for the central  
19 well field area show that as of January 2016,  
20 the water levels there were only 41,000 acre  
21 feet below predevelopment levels?

22 A. It does.

23 Q. What's the impact of those high water levels  
24 upon the City's ability to inject physical  
25 recharge in the aquifer?



1 A. The 41,000 clearly shows that there had been  
2 significant recovery since depletion from  
3 predevelopment, and at that those levels  
4 injection of water from the ASR system becomes  
5 difficult without drawing the levels down, of  
6 course.

7 Q. Mr. Henry, if you will look in the exhibit books  
8 that have been placed on the witness table by  
9 the District, and find Groundwater District tab  
10 49.

11 A. (Witness reviews document).

12 (GMD Exhibit 49 was marked for  
13 identification by the Reporter.)

14 MR. McLEOD: I offer this document for  
15 admission.

16 THE HEARING OFFICER: Any objections?

17 MR. STUCKY: Just so we are clear for  
18 the record, can we admit this as a District 49  
19 so we have it clear?

20 THE HEARING OFFICER: I believe that's  
21 what he did.

22 MR. McLEOD: It is so marked by the  
23 reporter.

24 THE HEARING OFFICER: GMD 49 will be  
25 admitted.

1 BY MR. McLEOD:

2 Q. Mr. Henry, please turn to Page 15 of that  
3 report.

4 A. Okay.

5 Q. What does it show to be the calculation of  
6 predevelopment storage in the Wichita well field  
7 area?

8 A. The central part of the study area states  
9 1,025,000 acre feet.

10 Q. Please turn to section 3.4 of the proposal,  
11 which is in the black binder, 3-6 of the  
12 proposal, and that document has been admitted as  
13 Exhibit 1. Now, City's Exhibit 1.

14 A. Okay.

15 Q. And, Mr. Henry, you were here for the discussion  
16 yesterday of things that were and weren't  
17 proposed permit conditions. The section 3.4 of  
18 the proposal reflects the proposed permit  
19 conditions of the City's --

20 A. Hang on, I am not on the right page.

21 Q. Find section 3.4.

22 A. (Witness reviews documents). I see figure 13.

23 MR. McLEOD: May I approach the  
24 witness?

25 THE HEARING OFFICER: Yes.

1 A. Thank you.

2 Q. Mr. Henry, in that section 3.4 of the proposal,  
3 does it reflect some proposed permit conditions  
4 for the City's request for aquifer maintenance  
5 credits?

6 A. It does.

7 Q. Would condition Number 3, of the proposed AMC  
8 proposed conditions, limit ASR Phase I in  
9 recovery wells to recovery of physical recharge  
10 only?

11 A. It does.

12 Q. Does proposed condition Number 1 provide that  
13 the physical recharge activities will continue  
14 to occur during periods when aquifer conditions  
15 facilitate adequate physical recharge capacity  
16 combined by an annual ASR, excuse me, ASR  
17 operations plan?

18 A. It does.

19 Q. And is the 120,000 acre foot cap on total  
20 accumulation of recharge credits and AMCs is  
21 that addressed in condition Number 4?

22 A. Yes.

23 Q. And to clarify a question that came up, and I am  
24 not sure ever got answered during Mr. Pajor's  
25 testimony, what does that condition there tell

1           us about the basis of that 120,000 acre foot  
2           cap, what it was derived from?

3       A.    That was derived from the conceptual development  
4           of ASR program that was an estimate at the time  
5           of the central well field basin storage area,  
6           based on the '93 levels.

7       Q.    And it also reflects that that proposed 120,000  
8           acre foot limit represents an estimated 11.7  
9           percent of the total aquifer storage there?

10      A.    Correct.

11      Q.    So really we are talking there about deriving  
12           this proposed cap based on capacity and  
13           essentially the top layer of the aquifer; is  
14           that correct?

15      A.    Yes.

16      Q.    Does proposed permit condition Number 2 limit  
17           the accrual of all recharged credits to the rate  
18           and quantity authorized by the ASR Phase II  
19           surface water right?

20      A.    Absolutely.

21      Q.    In the black binder, please turn to the proposal  
22           correspondence tab.

23      A.    (Witness complies).

24      Q.    And behind it back to number pages 121 to 127.

25      A.    Okay.

1 MR. McLEOD: Before I offer this let me  
2 check, I think somebody may have already put  
3 that in. I think this is already in but other  
4 than spending the time to look for the exhibits,  
5 let's look.

6 (City Exhibit 21 was marked for  
7 identification by the Reporter.)

8 Q. In the back binder behind tab correspondence  
9 numbered 121 to 127 I had the document marked as  
10 City's 21. Mr. Henry, what is the document?

11 A. This is a letter of Alan King with public works  
12 and utilities to David Barfield dated May 22nd,  
13 2018.

14 Q. Were you here during the testimony of Mr. Pajor  
15 when a copy of this was introduced as another  
16 party's exhibit, and Mr. Pajor confirmed that it  
17 was an official statement on the part of the  
18 City?

19 A. I was here.

20 Q. If you would look at numbered Page 126 in that  
21 document, and particularly paragraph 14 on that  
22 page.

23 A. Okay.

24 Q. Does it express that the City agrees with the  
25 operating principle that native water rights

1 should be utilized prior to recharge credits?

2 A. It does.

3 Q. And just as a clean up, Mr. Henry, the printed  
4 material that appears on the reverse of page  
5 127, is it part of this document?

6 A. No, it doesn't appear to be the letter ends on  
7 page 127.

8 MR. McLEOD: Thank you. I offer it for  
9 admission.

10 THE HEARING OFFICER: Any objection?

11 MR. STUCKY: No objection.

12 THE HEARING OFFICER: City 21 will be  
13 admitted.

14 BY MR. McLEOD:

15 Q. Under the City's proposal, Mr. Henry, would the  
16 availability of water in the Little Arkansas  
17 River the diversion remain identical to the base  
18 flow and seasonal limits developed as part of  
19 the ASR Phase I and Phase II permitted process?

20 A. Yes, there are no proposed changes in that  
21 regard.

22 Q. Is the intention of the proposal that use of  
23 this water directly replaces diversions that  
24 would otherwise be required from the Equus Beds  
25 well field resulting in an equal amount of

1 groundwater effectively left in storage for the  
2 benefit of all aquifer users?

3 A. Absolutely.

4 MR. McLEOD: I don't have further  
5 questions for the witness.

6 THE HEARING OFFICER: Mr. Oleen.

7 MR. OLEEN: No questions by DWR.

8 THE HEARING OFFICER: Mr. Stucky.

9 MR. STUCKY: Thank you. May I have a  
10 moment to locate the exhibits?

11 THE HEARING OFFICER: Yes. Do we need  
12 to go off the record?

13 MR. STUCKY: Yes.

14 THE HEARING OFFICER: Off the record.

15 (A short off-the-record discussion  
16 was held at this time.)

17 THE HEARING OFFICER: Back on the  
18 record.

19

20 CROSS EXAMINATION

21 BY MR. STUCKY:

22 Q. Mr. Henry, yesterday you indicated that you have  
23 a Bachelor of Science in what was the official  
24 degree you said you had?

25 A. Biology.

1 Q. Biology. But as far as any experience in  
2 modeling or hydro geology or geology, you don't  
3 have any education or experience in that; is  
4 that correct?

5 A. I have no experience in modeling, I have some  
6 course work in geology; but your point is  
7 correct.

8 Q. Okay. Now, yesterday you talked about Exhibit  
9 16, which I believe was a letter regarding the  
10 City Council meeting.

11 A. If you could point me to that document, I would  
12 confirm that.

13 Q. It is in the purple notebook Pages 60 and 61 in  
14 the purple notebook under the tab drought  
15 response.

16 A. (Witness reviews documents.) Okay.

17 Q. Now, with respect to that document you mentioned  
18 that there were several stages; and, in fact,  
19 there are four stages here identified to try and  
20 reduce water consumption in the City; is that  
21 correct?

22 A. Correct.

23 Q. And the first was a rebate program and then it  
24 scales all the way down to at some point cutting  
25 off most uses of water; is that correct?



1 A. Generally.

2 Q. Now, did you help to develop this particular  
3 plan?

4 A. I participated in planning meetings.

5 Q. In other words, were the ideas in this plan were  
6 they your ideas or were you basically just being  
7 consulted with regard to the ideas in this plan?

8 A. They were developed as part of the team.

9 Q. It's indicated in here that certain activities  
10 would be exempt; is that correct?

11 A. Yes, in some cases.

12 Q. How is that decided?

13 A. That was decided through a process of  
14 development by the project team and interaction  
15 between the project team and City Council  
16 members in workshop settings.

17 Q. Would it be economical, or feasible, to make the  
18 requirements to limit water use more stringent?  
19 Could you make those requirements more stringent  
20 in nature?

21 A. I couldn't.

22 Q. Could the City Council?

23 A. The City Council they direct policy, they could  
24 if they wanted to.

25 Q. So, in other words, if they chose to make this,

1           these requirements more stringent, would you at  
2           least agree with me that that would further  
3           limit water use in the city?

4       A.    That's the concept, yes.

5       Q.    I ask that you flip now to Exhibit 17 in your  
6           notebook.  And it was, I think the first, one of  
7           the first documents following the orange tab,  
8           drought response plan in that purple notebook.

9       A.    (Witness reviews documents).  The PowerPoint?

10      Q.    That's correct.  Drought planning initiative.

11      A.    Yes.

12      Q.    I want you to flip with me a few pages in to  
13           this document and on Page 6 I ask that you walk  
14           with me to Page 6.

15      A.    Okay.

16      Q.    So on Page 6 in this document there are several  
17           different options, as I understand it, to  
18           increase water for the city; is that right?

19      A.    To increase water for the city?  No.

20      Q.    To come up with additional sources of water for  
21           the City, is that what these options are  
22           designed to accomplish?

23      A.    Yes.

24      Q.    So with respect to Option 1, it says:  Restore  
25           well field capacity.  And the description is

1 restore well capacity extends the use of Cheney  
2 but shortens the life of the aquifer. So, in  
3 other words, tell me first of all what is meant  
4 by restored well capacity as it relates to  
5 Option 1?

6 A. I don't recall.

7 Q. You don't know which wells it's referring to?

8 A. No, I would imagine it would be the city's wells  
9 and Equus Beds well field. It could mean the  
10 local well field. I don't know for sure what  
11 that means.

12 Q. It says that restoring this well capacity,  
13 whatever that would constitute, would you agree  
14 with me that it's indicated here at least that  
15 that would account for 15,000 acre feet of  
16 water?

17 A. Yes.

18 Q. But if we are to restore what we believe to be  
19 wells in the Equus Beds well field, and whether  
20 it's improved them, or we are not really sure  
21 what that means, but if we were to do that there  
22 is a detriment that's identified in this Option  
23 1 as well; is that correct?

24 A. What do you mean by detriment?

25 Q. Well, can you read to me again the first

1 sentence of that description.

2 A. Restore well capacity, extends the use of  
3 Cheney, but shortens the life of the aquifer.

4 Q. So, in other words, if these wells are restored,  
5 and additional water is taken out of the  
6 aquifer, it was the City's view that the  
7 detriment would be that it would shorten the  
8 life of the aquifer; is that correct?

9 A. Relative to the City's rights, yes.

10 Q. Now, there is an Option 2 that's also identified  
11 here. It says that water rights essentially  
12 could be purchased from other users, and I  
13 assume within the Equus Beds aquifer, is that  
14 what Option 2 constitutes? Or do you know?

15 A. I don't know. You know, it takes two parties to  
16 come to that kind of an agreement, and those  
17 negotiations never happened. So I don't have an  
18 opinion or can't comment on that.

19 Q. I guess my question is, it indicates a specific  
20 number of acre feet that somebody, as they were  
21 putting together this plan, believed could be  
22 accumulated and the number was 7,500 acre feet.  
23 I guess my question is, to come up with a number  
24 like that, it would have suggested to me that  
25 there was at least initial conversations with

1           somebody. But as I hear you today you don't  
2           know what the nature of any of those discussions  
3           were; is that correct?

4    A.    I don't know if I could agree with the word  
5           initial conversations. I think somebody had a  
6           concept and identified a possibility of 7,500  
7           acre feet.

8    Q.    Is that 7,500 acre feet just an arbitrary  
9           number?

10   A.    I have no idea.

11   Q.    Let's move on to Option Number 3. It says in  
12           Option Number 3 the description says, additional  
13           wells would be installed in west Wichita to tap  
14           and shallow groundwater that is not currently  
15           being used in the system and that would generate  
16           five to 10,000 acre feet. Tell me about the  
17           drilling of these shallow wells in west Wichita.  
18           What is the concept there?

19   A.    I don't recall whether these are existing rights  
20           that the City already has or whether it would be  
21           under rights that we would have to acquire.  
22           These were some potential strategies that were  
23           developed as part of a plan phase that never  
24           went forward. We have moved on since then. So  
25           I don't recall.

1 Q. Okay. And I hate to do this to you, but I am  
2 going to circle back to Option 1 just for a  
3 moment. That 15,000 acre feet that they  
4 identified in Option 1 is that to be new water?  
5 Is that new water to be accumulated? Do you  
6 know the answer to that?

7 A. It would not be new water in the context of the  
8 City's water rights.

9 Q. So that 15,000 acre feet isn't contemplating new  
10 permits?

11 A. I don't know whether it is or is not.

12 Q. As you are sitting here today you are not sure  
13 where that 15,000 acre feet would come from?

14 A. Correct.

15 Q. Let's move to Option Number 4 in this particular  
16 document. I will read the description, the  
17 first sentence of that description for you. It  
18 says: Groundwater not presently available for  
19 use could be desalinated and pumped in to the  
20 system. Do you see that sentence?

21 A. I do.

22 Q. And there is a cost that is estimated to  
23 accomplish that purpose. Do you see what that  
24 cost is?

25 A. Yes. I do.

1 Q. Could you read for me what that cost is?

2 A. It says \$200 million dollars.

3 Q. Tell me a little bit about that idea, how would  
4 that work that you could take salt out of water  
5 and where would that be accomplished?

6 A. It wasn't my idea, so I don't know.

7 Q. Do you have any knowledge or expertise about  
8 whether or not that plan was designed to take  
9 some of the salt out of the Burrton plume, for  
10 example?

11 A. It could have been.

12 Q. But as you are sitting here today can you answer  
13 affirmatively as far as what the nature of that  
14 plan was?

15 A. I think it was relative to the Burrton chloride  
16 plume, but I can't say with hundred percent  
17 certainty.

18 Q. Just so I am understanding, if that is true,  
19 that for \$200 million, water could be diverted  
20 from the Burrton plume, the City of Wichita  
21 could take the salt out and could have a supply,  
22 is that what this concept is?

23 A. I don't know. I don't know what all the \$200  
24 million covered, if that covered the full cost,  
25 if there were other partners. I don't know.

1 Q. Were you involved in this drought planning  
2 initiative, this February 26th, 2013,  
3 initiative?

4 A. This is a PowerPoint presentation that  
5 represents planning that took place by a large  
6 team over a period of time.

7 Q. Were you involved in helping to plan or to come  
8 up with this plan?

9 A. I was in some of those planning meetings, I was  
10 in some of the meetings to review the work, the  
11 work was done by others, it was not done by me.

12 Q. Just a moment ago you indicated that currently  
13 the City is only able to either pump water from  
14 Cheney Reservoir on one hand or water from the  
15 Equus Beds well field, but can't get hundred  
16 percent of its water from either location. Is  
17 that what your testimony was?

18 A. It was that there are treatment challenges that  
19 we can't treat hundred percent Equus water and  
20 meet our requirements.

21 Q. And at this point can you treat hundred percent  
22 Cheney water and meet your requirements?

23 A. I am not certain if we could treat hundred  
24 percent, but we could treat, well, I am  
25 comfortable in saying 80% maybe, 90%.



1 Q. Would you agree with me that plans are in place  
2 with the City to come up with the infrastructure  
3 to be able to treat and get hundred percent of  
4 its water supply either from the Equus Beds or  
5 from Cheney Reservoir?

6 A. Absolutely.

7 Q. Do you have any idea when that plan is going to  
8 be in place?

9 A. It should be in place by fourth quarter of 2024,  
10 I believe.

11 Q. Do you have any knowledge as far as why we are  
12 looking at approximately another five years  
13 before that would be in place?

14 A. That's how long it will take the City to  
15 complete design and do construction of a new  
16 water treatment plant.

17 Q. Where will that treatment plant be constructed?

18 A. It will be constructed on land the City owns  
19 within the city limits of Wichita near 21st  
20 Street and Zoo Boulevard.

21 Q. When this water plant is constructed with its  
22 ability to treat water, if you are able to treat  
23 water in this plant that allow the City to have  
24 hundred percent of its water supply from either  
25 Cheney Reservoir or the Equus Beds aquifer, does

1           it also follow that the City could treat water  
2           from other sources at this plant?

3       A.    The only other source, well, there is the Equus  
4           Beds well field, there is Cheney Reservoir,  
5           there is water that's diverted from the Little  
6           Arkansas River and treated at the ASR surface  
7           water treatment plant and then the City has some  
8           rights in a local well field in the City of  
9           Wichita. Those are the sources that are being  
10          contemplated under the current design. No other  
11          sources are being designed for.

12       Q.    I understand that. But let's say hypothetically  
13           speaking the suddenly the City of El Dorado  
14           calls you up, the phone rings you answer, it's  
15           Don Henry on the phone and the City of El Dorado  
16           says we want to sell you 40,000 acre feet of  
17           water a year, and all you have to do is find a  
18           way to treat it.

19                            Under this hypothetical, would this  
20           treatment plant built in 2024 would it have the  
21           capability of treating water, from another  
22           source, say El Dorado?

23       A.    I think it's reasonable to assume so.

24       Q.    I ask that you flip now to Exhibit 18. The  
25           City's Exhibit 18, and it's a document entitled,

1 Water Supply Planning. It's right after the  
2 strategic plan in the purple notebook. I am  
3 sorry, it's a green tab. We had to put new tab  
4 of colors on here. That confused me.

5 A. I have strategic plan and right behind that is  
6 program manager notes.

7 Q. If you flip in just a few pages there was a  
8 document that says water Supply Planning at the  
9 very top.

10 A. Behind which tab? I am sorry.

11 Q. Behind the green tab that's called Strategic  
12 Plan.

13 A. Okay.

14 Q. And it looks to be about five pages in there is  
15 a document called Water Supply Planning.

16 A. Okay.

17 Q. Are you on that document?

18 A. Yes.

19 Q. You were asked I believe yesterday several  
20 questions about some of the specifics in this  
21 document; is that correct?

22 A. I believe I was asked about the 2% drought and  
23 the 1% drought under the design drought section,  
24 I believe is what it was.

25 Q. Let's talk about that design drought section.

1 In the second paragraph under the design drought  
2 section could you read for me the very first  
3 sentence of that second paragraph.

4 A. Sure. Guidelines, from the State of Kansas  
5 require communities to plan for a minimum of a  
6 2% drought, which occurs roughly every 50 years.

7 Q. I will stop you there. So, in other words,  
8 current laws and current requirements only  
9 require a city to plan for a minimum of a 2%  
10 drought, is that what this says?

11 A. What it means to me is that is a minimum level  
12 of responsibility that any utility should plan  
13 for.

14 Q. So the answer to my question is yes?

15 A. Okay.

16 Q. The very next sentence though, actually the  
17 third sentence says: That 1% droughts are what,  
18 are the next level that a city could plan for.  
19 Is that correct, basically what the end of that  
20 paragraph is saying?

21 A. Yes. It also says they do occur and have a  
22 substantial impact on the water supply.

23 Q. In the very next paragraph it's indicated that  
24 during a 1% drought within the City it would  
25 require 71 months of outdoor watering bans. Do

1           you see that language?

2       A.    I do.

3       Q.    Do you know how that 71 months was determined,  
4           as you are sitting here today, do you have any  
5           knowledge as far as how that amount of months  
6           was calculated?

7       A.    I do not.

8       Q.    And in the very next sentence it says, within a  
9           2% drought it would require 11 months of  
10          watering bans. Do you see where I am reading in  
11          that document as well?

12      A.    I do.

13      Q.    And do you have any knowledge about how 11  
14          months was calculated?

15      A.    I don't.

16      Q.    I would ask that, well, let me back up. It says  
17          in this document under highest citizens'  
18          priority that within the City of Wichita  
19          citizens were willing to pay more for a viable  
20          water supply, is that what that says? I am  
21          asking that you look right under highest citizen  
22          priority the second sentence it says: The  
23          public is willing to pay for water reliability,  
24          do you see where I just read?

25      A.    Yes.

1 Q. So, in other words, when the citizens of Wichita  
2 were prioritizing what they were willing to pay  
3 money for, they were willing to pay for a viable  
4 water supply; is that correct?

5 A. According to this survey, yes.

6 Q. Did that survey specify the extent to which the  
7 citizens of Wichita would be willing to have  
8 their rates increased to have a viable water  
9 source?

10 A. I don't know if it did or it did not. I can't  
11 imagine that it did.

12 Q. But, in other words, pursuant to this study,  
13 what was clear was that the citizens in the City  
14 of Wichita were willing to pay good money to  
15 ensure that they had a viable water source, is  
16 that true?

17 A. Absolutely. Water supply is a top priority for  
18 citizens and they are willing to pay for that.

19 Q. When were the water rates last increased in  
20 Wichita?

21 A. City Council adopted the new rate ordinance in  
22 December of this year. They go in effect  
23 January 1.

24 Q. What will the increase be?

25 A. Roughly 5% for combined water and sewer.

1 Q. Prior to that, when was the last rate increase?

2 A. It would have been a year prior.

3 Q. And what percent was the year prior?

4 A. I don't recall.

5 Q. When you increase rates by 5% do the citizens  
6 generally complain? Or what does that look like  
7 when the rates are increased?

8 A. Sure, I mean, it's a mixed response. There are  
9 some citizens who are informed and they  
10 understand and willing to pay those increases.  
11 And there are others, that for different  
12 reasons, affordability, whatever reasons, they  
13 would oppose that and have, yes.

14 Q. So I am clear, that if there was an initiative  
15 that the City wanted to pay for to secure a  
16 viable water source, the City could choose to  
17 further increase rates to help pay for it, is  
18 that a true statement?

19 A. Well, sure. The City Council, the electives,  
20 have that ability.

21 Q. On the next page of this document, in that  
22 second full paragraph it refers to a rebate  
23 program that was implemented in the City.

24 A. I am sorry, what page are you on?

25 Q. It's Page 2 of that document, second full

1 paragraph. It talks about a rebate program.

2 A. Okay. I see that.

3 Q. First of all, tell me how does that rebate  
4 program work?

5 A. There are certain appliances, dishwashers,  
6 clothes washers, other things like shower heads,  
7 low flush toilets, those types of things that  
8 are certified as being water efficient. That if  
9 a citizen purchases one of those items then the  
10 City offers a certain amount of rebate back on  
11 that with a receipt.

12 Q. And in that first sentence of that second full  
13 paragraph, it says that the rebate program in  
14 2013 at least reduced usage by 0.44 percent. Do  
15 you see where I just read?

16 A. Yes.

17 Q. So it decreased usage by less than half a  
18 percent, is that true?

19 A. That's true.

20 Q. Do you know why the response with regard to  
21 reduced usage was so poor with regard to that  
22 rebate system?

23 A. I don't know that that is poor. The city has an  
24 ongoing conservation target every year of .35  
25 percent and this exceeds that, so I would say it



1 performed well.

2 Q. How does the City of Wichita water rates compare  
3 to those of other cities, for example, Newton?

4 A. I have no idea what Newton's water rates are.

5 Q. To other cities, in general, do you have any  
6 knowledge?

7 A. Yes. Compared to the 50 largest cities the City  
8 of Wichita has rates that are in the top ten for  
9 low rates.

10 Q. What about compared to other, say Hutchinson,  
11 another larger, or Salina, another larger city  
12 in Kansas? Do you know how your rates would  
13 compare to those cities?

14 A. No, I don't know.

15 Q. At the bottom of that page it refers to a 2014  
16 water conservation program. And there are  
17 several initiatives that are identified. It  
18 says a modified rebate program, study landscape  
19 incentives, and at the very bottom it says study  
20 industrial reuse. What is meant by industrial  
21 reuse?

22 A. I believe what is meant by industrial reuse here  
23 would be to use reclaimed water from the City's  
24 wastewater treatment plant and reuse it for  
25 industrial purposes.

1 Q. And in the same document it says that the  
2 affects of that would be determined during the  
3 studies, is that a true statement?

4 A. Yes.

5 Q. Do you know if those studies have occurred?

6 A. I know some work has been done.

7 Q. Do you know at what point the City will know if  
8 it's able to get some of its water usage from  
9 reclaiming this industrial water?

10 A. I know that it's already occurred.

11 Q. And as I understand it, the study is designed to  
12 help determine if more water can be reclaimed,  
13 is that what this study is about?

14 A. I am not sure.

15 Q. Let's look to the next page, Page 3 of that  
16 document.

17 A. Okay.

18 Q. Yesterday I asked Mr. Pajor about the nine  
19 potential options that the City was considering  
20 to increase its water supply. And I asked Mr.  
21 Pajor to name some of those. In addition to  
22 what Mr. Pajor named, do you have any other  
23 indication of what those nine options were?

24 A. I don't recall exactly what Mr. Pajor named and  
25 I can't list nine of them, but in general there

1           were different options for ASR improvements, it  
2           included potential reuse, I believe. And a  
3           couple of options for El Dorado water.

4       Q.    Tell me about the bank storage wells that would  
5           pull river water downstream from the wastewater  
6           plant and treat it to drinking water standards,  
7           tell me about that option.

8       A.    That was a concept that was discussed in terms  
9           of reuse water. And the concept would have been  
10          to reclaim water that was discharged from the  
11          water treatment plant through bank storage  
12          wells.

13      Q.    So to reclaim that water, and increase the  
14          capacity to reclaim that water, would it be a  
15          true statement that the city would have to build  
16          additional bank storage wells?

17      A.    Yes.

18      Q.    Have those additional bank storage wells been  
19          constructed?

20      A.    No. This was just a concept, it hasn't gone any  
21          further than that.

22      Q.    Do you have any knowledge, as you are sitting  
23          here today, as far as why that particular  
24          concept hasn't gone any further?

25      A.    It was expensive and the concept of reuse, there

1           wasn't any appetite for it at the time.

2       Q.    How much is expensive?

3       A.    I don't recall.

4       Q.    With respect to the El Dorado reservoir, we did  
5           hear testimony yesterday that one of the  
6           concerns with El Dorado reservoir is the extent  
7           to which the City of Wichita may be at the mercy  
8           of the City of El Dorado. Was that one of the  
9           concerns that was identified?

10      A.    Right.

11      Q.    Has the City discussed with, the City of  
12           Wichita, discussed with the City of El Dorado  
13           the possibility for a long term contractual  
14           arrangements to achieve getting water from  
15           El Dorado reservoir?

16      A.    Do you want to expound on that for me?

17      Q.    Well, has someone from the City of Wichita  
18           contacted the City of El Dorado, for example,  
19           and said, could we enter in to a 30 year  
20           contract where you promise for us to be able to  
21           receive your water during that period?

22      A.    I don't know. I don't know whether, who  
23           contacted whom, but I do know there were  
24           discussions between the City of Wichita and the  
25           City of El Dorado on the possibility of the City

1           utilizing El Dorado water for drought supply.

2       Q.    And I guess my question is -- well, strike that.

3                        Let me back up.  Would you at least  
4           agree with me that from a conceptual standpoint  
5           it would be possible for the City of Wichita to  
6           enter in to a long term contractual arrangement  
7           to secure water from the City of El Dorado?  Is  
8           that a possibility?

9       A.    In what context?

10      Q.    If the two parties were to agree on this long  
11           term contractual arrangement, could that be a  
12           possibility if both sides agreed?

13      A.    I don't know whether it would be possible or  
14           not.  If you are asking whether it would be  
15           legal, that's not for me to answer.  It may or  
16           may not be possible for economic reasons or for  
17           water availability or all kinds of variables.  I  
18           don't know.

19      Q.    As you were sitting here today, you weren't  
20           involved in any discussions with the City of  
21           El Dorado to see if there could be a viable  
22           source achieved for 30, 40, 50 years, you  
23           weren't involved in those discussions?

24      A.    Personally I didn't have any discussions with El  
25           Dorado.

1 Q. So you don't have any personal knowledge as far  
2 as whether that barrier to achieving a long term  
3 supply from El Dorado could have been overcome,  
4 is that a true statement?

5 A. The only knowledge I have of talking to El  
6 Dorado for water supply would have been for  
7 drought supply, and that's a non starter because  
8 the supply that El Dorado has, they have plenty  
9 of water supply during non drought years, but  
10 the City does also. We spill water out of  
11 Cheney just like El Dorado does. But when you  
12 get in to a prolonged 1% drought the water in  
13 the El Dorado reservoir is not there for the  
14 City's use.

15 Q. And who did those discussions occur with?

16 A. You know, I am not going to name names, I am not  
17 sure who those parties were, they were under the  
18 direction of the city manager and the department  
19 head.

20 Q. Have you looked at any studies or any kind of  
21 analysis personally that verified what you just  
22 said? Or is that just high level discussions?

23 A. High level discussions. I know, yes, I have  
24 seen reports, but I can't recall what they were  
25 or who they were authored by, but I am

1 reasonably informed it that capacity.

2 Q. Have you brought any of those reports to this  
3 hearing? Or have any of those reports been  
4 produced as far as an exhibit, to your  
5 knowledge?

6 A. Not that I am aware of.

7 Q. I am going to ask that you flip in your exhibit  
8 notebook to Exhibit 19.

9 A. Where is that?

10 Q. It is in the black notebook, it is in, it's  
11 after proposal correspondence, it looks like a  
12 pinkish tab, the very first document.

13 A. I am there.

14 Q. Are you on that document now?

15 A. Yes, sir.

16 Q. You testified that this was an official document  
17 that I think Mr. Jacobs sent to the Division of  
18 Water Resources; is that correct?

19 A. Correct.

20 Q. Would you agree that this document, at least at  
21 the time, represented an official opinion of the  
22 City?

23 A. Yes.

24 Q. Now, this letter was sent to the Division of  
25 Water Resources; is that correct?

1 A. Yes.

2 Q. Why wasn't this letter also carbon copied to the  
3 Groundwater Management District? Or do you  
4 know?

5 A. I don't know.

6 Q. Just by looking at the face of this document  
7 though, does it give you any indication that  
8 this correspondence was also sent to the  
9 Groundwater Management District at the same  
10 time?

11 A. At a glance I don't see that there is any  
12 indication that it was.

13 Q. All right. In the very first paragraph of that  
14 document, it refers to, in that first sentence  
15 it refers to the City's goal to construct  
16 additional bank storage wells in the future. Is  
17 that an accurate characterization of part of  
18 that sentence?

19 A. It says create appropriate regulations for bank  
20 storage wells and the City's Aquifer Storage and  
21 Recovery Project.

22 Q. Do you have any knowledge, as you are sitting  
23 here today, whether or not the City of Wichita  
24 intends to construct additional bank storage  
25 wells in the future?



1 A. That would be speculation whether we will or  
2 will not. I know that it's possible.

3 Q. Is it in your plan?

4 A. Which plan?

5 Q. In the City's strategic plan to secure a water  
6 source. Does the City have the intention of  
7 constructing additional bank storage wells in  
8 the future?

9 A. It's possible. Some of that depends upon the  
10 outcomes of the permit modifications. And that  
11 has been communicated to Groundwater Management  
12 District early on when we were discussing the  
13 proposal with them that we needed to know sooner  
14 rather than later what their opinions were or  
15 what they would suggest in terms of reasonable  
16 terms and conditions, because the City was  
17 planning what we would need to do in terms of  
18 the drought.

19 Q. So to characterize your testimony, if some of  
20 the conditions that the city thought necessary  
21 fell in to place then the City would desire to  
22 build additional bank storage wells?

23 A. Well, I think with the current terms and  
24 conditions that we have now, and being compelled  
25 to pump the aquifer down in order to make room

1 for injection, that additional capacity in terms  
2 of storing credits faster would be desirable.

3 Q. Now, just a moment ago you indicated to me that  
4 this, this letter was an official communication  
5 from the City and as the result you believed it  
6 was the official position of the City at the  
7 time; is that correct?

8 A. I believe so.

9 Q. I ask that you flip to Page 2 of this letter.

10 A. (Witness complies).

11 Q. Could you read the first sentence. I think it's  
12 the second full paragraph. It's a little  
13 unclear how this letter is written, but the  
14 first sentence where it starts with during.

15 A. Sure. During the discussion and approval  
16 process for the Phase I ASR applications, the  
17 DWR staff and the City agreed that using the  
18 1993 levels as the bottom of the basin storage  
19 area was a reasonable and conservative number at  
20 the time.

21 Q. So at least the author of this letter, Mr.  
22 Jacobs, indicated that the original minimum  
23 index level, which is the minimum index level  
24 the City has in place right now, was reasonable,  
25 is that a true statement?

1 A. Yes.

2 Q. Now, on Page 3 of that letter it indicates that  
3 some water was restored to the Equus Beds  
4 aquifer by the City reducing its pumping. Do  
5 you have any idea, as you are sitting here  
6 today, how that number was derived or  
7 calculated?

8 A. I am not familiar with the calculation, no.

9 Q. So if you were to try and testify as to how that  
10 number was determined it would be purely your  
11 speculation?

12 A. On how it was calculated? Yes.

13 Q. At the bottom of that letter it indicates some  
14 conclusions from ASR Phase I and II. Conclusion  
15 Number 13 that's identified at the bottom of  
16 that page.

17 A. I am sorry, what page are you on?

18 Q. I am on Page 3.

19 A. Okay.

20 Q. Page 3 at the bottom it says ASR Phase I,  
21 conclusion Number 13. Do you see where I am  
22 reading?

23 A. Yes, sir.

24 Q. And if I were to highly summarize that  
25 conclusion, does that conclusion indicate that

1 keeping the minimum index level at the level  
2 that was determined, was in the public interest  
3 at that time?

4 A. Yes.

5 Q. And additionally, it indicates in, well, could  
6 you read the very next ASR Phase I order, Number  
7 8, could you read that one for me?

8 A. The water shall only be injected into the basin  
9 storage area by means of injection wells when  
10 the water level at any required monitoring well  
11 located within 660 feet of an injection well is  
12 10 feet or more below the land surface elevation  
13 at those observation wells. Do you want me to  
14 continue?

15 Q. Yes, please.

16 A. Recharge credits may be withdrawn from a cell  
17 only when recharge credits are available from  
18 the cell and the static water level at its index  
19 well is above the lowest index level. Do you  
20 want me to continue?

21 Q. So just a question, general question, is the  
22 recharge capacities of the City is it partially  
23 dependent upon the level of a given index cell,  
24 water level in a given index cell?

25 A. What do you mean by capacity?

1 Q. Well, is the capacity of the City to physically  
2 recharge the aquifer, somewhat dependent upon  
3 the water level of an individual index cell?

4 A. Yes. The rate at which it can be injected and  
5 the amount it can be injected is affected by the  
6 water level, sure.

7 Q. Flip with me now to Page 4 of that document.

8 A. (Witness complies). Okay.

9 Q. I think you should be on that page already.

10 A. Yes.

11 Q. In that second full paragraph in the second  
12 sentence it indicates, toward the end of that,  
13 that recharge credits during periods when water  
14 levels are below those that existed in 1993  
15 would not serve the public interest because it  
16 would deteriorate any established hydraulic  
17 barrier created from recharge injection. Would  
18 you agree that that was an accurate  
19 characterization of what's written in this  
20 letter?

21 A. Yes.

22 Q. So, in other words, what was indicated in this  
23 particular part of that sentence was that if  
24 water was taken below those 1993 levels, and I  
25 will break up that sentence. First of all, that

1 would not serve the public interest, is that  
2 what that sentence says?

3 A. Yes. And it is in the context of Phase I of  
4 ASR, and the proposal doesn't contemplate  
5 removing credits below the '93 levels for Phase  
6 I.

7 Q. But at least with respect to Phase I going down  
8 below that level, there was a concern that it  
9 would impact the public interest; is that right?

10 A. Yes.

11 Q. And also with respect to Phase I, it was  
12 indicated that it would deteriorate any  
13 established hydraulic barrier created from  
14 recharge injection, was that a concern?

15 A. Sure. The higher the water level is, the more  
16 effective the barrier is in Phase I.

17 Q. Well, I think we are talking about two different  
18 things. We are talking about the overall water  
19 level of the aquifer, and we are talking about  
20 dropping below that minimum index level.

21 A. Right.

22 Q. So, in other words, would you agree with me that  
23 at least in the context of that statement, if  
24 the minimum index level was dropped between that  
25 1993 level to a lower level, at least in the

1 context of this particular statement, by Mr.  
2 Jacobs, would you agree that that wouldn't have  
3 been in the public interest, in his mind?

4 A. Yes.

5 Q. In the very next sentence, another concern Mr.  
6 Jacobs indicates, and a concern he has with  
7 withdrawing water below that lowest index level  
8 is concern of maintaining water quality, would  
9 you agree that's stated in the next sentence?

10 A. Yes.

11 Q. So, in other words, once again Mr. Jacobs'  
12 conclusion was that if water, at least with  
13 respect to ASR Phase I, was withdrawn below that  
14 1993 minimum index level it could impact or  
15 threaten water quality; is that correct?

16 A. It could, but you have to consider that in the  
17 context of operations when it comes to the  
18 proposal. Because with the current terms and  
19 conditions it would result in lower aquifer  
20 levels. In the context of the proposal the  
21 lower index levels would result in higher  
22 aquifer levels.

23 Q. Do you have any knowledge, as far as what has  
24 contributed to the aquifer, either increasing in  
25 the amount of water that's in the aquifer or the

1 water levels lowering? In other words, whether  
2 it's caused by the City of Wichita's use,  
3 industrial use, irrigation use, drought, have  
4 you done any of that modeling or any analysis in  
5 that regard?

6 A. I haven't done any modeling, but I am aware that  
7 since 1993 that the aquifer has recovered and  
8 that's due, in large part, to the City's  
9 adjustment in the way that we use Cheney  
10 Reservoir and the Equus Beds.

11 Q. But as far as any kind of science or research to  
12 try to determine what the cause for that  
13 recovery was, you haven't done any of that  
14 research or studying yourself; is that correct?

15 A. The staff that works for me has, I have not.

16 Q. Okay. How does lowering the minimum index  
17 levels in Phase II affect saltwater movement in  
18 the Arkansas River area, in the Little Arkansas  
19 River area?

20 A. I believe there are others that are more  
21 qualified to answer that than me.

22 Q. Well, just a moment ago you indicated that Mr.  
23 Jacobs believed if we were to lower the minimum  
24 index level with respect to ASR Phase I it would  
25 adversely impact the public interest, and it



1 would also adversely impact water quality. I  
2 guess my question is, do you have any knowledge  
3 about whether or not lowering the minimum index  
4 level with respect to ASR Phase II would have  
5 those same concerns. Do you have any opinion on  
6 that?

7 A. I do not.

8 Q. On the very next page, Page 5 of this letter, it  
9 says, Phase II, at the top of that page, of the  
10 ASR project, do you see that?

11 A. I do.

12 Q. Can you read that sentence for me?

13 A. Phase II of the ASR project was implemented with  
14 the goals of supply development, restoration of  
15 the Equus Beds as a resource and to provide a  
16 sustainable water supply during periods of  
17 drought.

18 Q. So, in other words, the City does at least  
19 recognize that restoration and preservation of  
20 the Equus Beds aquifer is important because it's  
21 a viable resource, is that true?

22 A. Absolutely. That's a foundation of our  
23 proposal.

24 Q. You were asked some questions about the City's  
25 Exhibit Number 20 and it had to do with

1 groundwater levels and it was a USGS document.

2 Do you recall those questions?

3 A. If you could point me to the document, that  
4 would help.

5 MR. STUCKY: Off the record.

6 (A short off-the-record discussion  
7 was held at this time.)

8 BY MR. STUCKY:

9 Q. The purple notebook behind the pink tab called  
10 water levels.

11 A. Okay.

12 Q. A moment ago on Page 9 of that document you  
13 testified regarding some implications regarding  
14 those numbers. But let me just clarify. You  
15 weren't involved in making these calculations or  
16 doing this research or determining these  
17 particular numbers; is that correct?

18 A. No. Not at all. The question that I was asked  
19 was regarding operations and how those were  
20 impacted by the levels that were indicated in  
21 the table.

22 Q. Just so I am clear, you weren't involved in any  
23 of the research that helped to create this  
24 particular report; is that correct?

25 A. No. But I am involved in the operations that

1           were relative to these levels.

2           Q.    You were also asked a question about GMD Exhibit  
3           49.  Just to refresh your memory, I don't have  
4           the document in front of me, but it was the  
5           document that spoke to river levels, and on the  
6           first page of the document instead of picture of  
7           a river it has a picture of a road.  Do you see  
8           that document?

9           A.    I do.  Scientific Investigations Report,  
10          2015-5121.

11          Q.    Just to clarify the record, you weren't involved  
12          in writing that document, or helping to  
13          determine any of research or calculations in  
14          that document either; is that correct?

15          A.    That's correct.

16          Q.    You indicate in your testimony that ASR credits  
17          should be saved as late as possible because it's  
18          advantageous to the city.  Is that a true  
19          statement of your testimony?

20          A.    Yes, as late as possible to the extent that it  
21          provides for the effectiveness as for the  
22          drought, yes.

23          Q.    To save those credits and use them in the last  
24          possible moments at the time of the drought, you  
25          said that's advantageous to the City to be able

1 to use them during that time, is that a true  
2 statement?

3 A. True.

4 Q. If the water then is withdrawn by the City  
5 during a time of drought, and these credits are  
6 withdrawn by the City during a time of drought  
7 and the aquifer has already been depleted,  
8 because of this drought, do you follow me so  
9 far?

10 A. Sure.

11 Q. Although it's advantageous to the City to  
12 withdraw those credits at that time, would it be  
13 advantageous to the aquifer?

14 A. Avoiding unnecessary withdrawals of those  
15 credits early and often, that is not  
16 advantageous. The delaying of the use of those  
17 credits is advantageous. And use of the water  
18 is advantageous just like the use of the water  
19 by all users at that time is advantageous. We  
20 are not any different.

21 Q. I am not speaking about over time, Mr. McLeod  
22 can ask you about those questions over time, if  
23 you know. What I am asking you about is the  
24 exact moment in time, we are in the middle of a  
25 drought, and the City says I want to withdraw

1           some credits and it's advantageous to us because  
2           we want some additional water. At that moment  
3           in time, do you believe it's advantageous for  
4           the rest of the aquifer and the rest of the  
5           water right holders in the aquifer at that point  
6           in time?

7       A.    It is no different than water that's taken out  
8           by any other user.

9       Q.    Well, so if this water is taken out, and it's  
10          depleted from the aquifer, is that advantageous  
11          to the aquifer at that point in time?

12      A.    Relative to the benefit of the levels that are  
13          there, yes.

14      Q.    So it is your testimony that if water is taken  
15          out of the aquifer, I just want to clarify the  
16          testimony, it is your testimony that if someone  
17          drains the aquifer, or they take water out of  
18          the aquifer, that's generally good for the  
19          aquifer? Is that your testimony?

20      A.    I don't understand how you would drain the  
21          aquifer, but that would be bad.

22      Q.    So it's bad, generally, to take water from the  
23          aquifer, just all things being equal, it's  
24          generally not a good thing to take water from  
25          the aquifer?

1 A. No, it's a good thing to take water from the  
2 aquifer. For instance, if a building is on fire  
3 you need to water to put the fire out, so that's  
4 a good thing.

5 Q. Yesterday there was a discussion about the  
6 benefits of withdrawing water from the City. So  
7 what I am trying to get at, is the benefit to  
8 whom? Is the benefit to the building that's  
9 burning? Is the benefit there? Is the benefit  
10 to the aquifer itself? I am trying to draw a  
11 distinction, and I am making a very simple  
12 distinction, in that analogy, if we take 1,000  
13 acre feet of water from the aquifer would you  
14 agree that that water is now taken from the  
15 aquifer?

16 A. Sure.

17 Q. And would you agree that the water levels in the  
18 aquifer would go down if that 1,000 acre feet is  
19 taken?

20 A. Yes.

21 Q. And in the sense that the water level in the  
22 aquifer has gone down, would you agree that the  
23 aquifer has been depleted?

24 A. Sure.

25 Q. And in the sense that the aquifer has been

1           depleted, would you agree that maybe it's a  
2           small detriment, in that particular  
3           hypothetical, but it would be a detriment to the  
4           aquifer itself. Would you agree?

5       A.    I would say the aquifer served it's intended  
6           purpose and is lower as the result.

7       Q.    I will go ahead and move on. With respect to, I  
8           would ask that we -- well, you weren't involved  
9           in any research or planning with respect, well,  
10          I am sorry. You weren't involved in any kind of  
11          calculations as far as projected future water  
12          needs of the City, were you involved in those  
13          calculations?

14      A.    In the calculations, no.

15      Q.    I ask that you now flip to Exhibit 1, the City's  
16          Exhibit 1, it's the proposal.

17      A.    (Witness reviews documents).

18      Q.    You talked about some permit conditions that are  
19          utilized in the City's proposal; is that  
20          correct?

21      A.    I did.

22      Q.    And you walked through several of those, and I  
23          think you talked about Number 1, Number 2,  
24          Number 3 and Number 4.

25      A.    Yes. And I appreciate it if you could point me

1           where that is, so that we could be on the same  
2           page.

3       Q.    It is in the black notebook, it follows the red  
4           tab called Proposal.

5                       MR. STUCKY:   May I approach the  
6           witness?

7                       THE HEARING OFFICER:   Yes.

8       A.    Thank you.

9                       BY MR. STUCKY:

10      Q.    We are on the same page; is that correct?

11      A.    Yes.

12                      THE HEARING OFFICER:   I may not be.

13                      MR. STUCKY:   I will approach.   Just to  
14           clarify the record, I think that the page  
15           numbers are somewhat unusual in this document,  
16           so I think the page number actually is 3-5 and  
17           the section is 3.4, just for the record.

18                      BY MR. STUCKY:

19      Q.    So with respect to section 3.4, Proposed AMC  
20           Permit Conditions would you agree that your  
21           testimony related to conditions 1 through 4?

22      A.    Yes.

23      Q.    With respect to permit condition Number 2, could  
24           you sum that one up for me again, just so I am  
25           clear.



1 A. Sure. The rate of accrual of all recharged  
2 credits cannot exceed the constructed physical  
3 diversion capacity of the ASR system, including  
4 direct surface water diversions and future bank  
5 storage wells, and will be limited to the rate  
6 and quantity authorized by Water Right Number  
7 46627. And I believe that's referring to the  
8 surface water right for ASR diversion, I believe  
9 it's 45,260 acre feet or thereabouts.

10 Q. That's the quantity of that water, right?

11 A. That's pretty close.

12 Q. Now, with respect to Number 4. It says:  
13 Therefore, the combined total quantity of AMCs  
14 and physical recharge credits cannot exceed  
15 120,000 acre feet.

16 A. Correct.

17 Q. Is that 120,000 number, is that 120,000 acre  
18 feet in a certain period of time? Or is the  
19 idea, or the concept, that the City can have up  
20 to 120,000 acre feet of accumulated credits at  
21 any given time? Is that the concept?

22 A. Well, the concept, right now there is no cap.  
23 So there were concerns expressed by individuals,  
24 when we did outreach, that the City should have  
25 a limit on the total number of credits that it

1           could accumulate. So it was reasonable to put a  
2           cap in place that was the amount of the storage  
3           within the central well field area.

4       Q.    Let me ask it this way, if we have 120,000 acre  
5           foot cap, and let's say hypothetically the City  
6           accumulates all 120,000 of those acre feet. Do  
7           you follow me so far?

8       A.    Sure.

9       Q.    And then the City uses 10,000 of those acre  
10          feet, can the City then accumulate another  
11          10,000 acre feet in the future to get back to  
12          that 120,000 acre foot cap?

13      A.    Yes.

14      Q.    Also in Number 4 it says, this 120,000 acre feet  
15          was calculated because it estimated 11.7% of  
16          total available aquifer storage. Is that what  
17          that portion says?

18      A.    It says that the 120,000 acre feet represents  
19          11.7%, yes.

20      Q.    Of storage capacity of the well field?

21      A.    The central well field storage area.

22      Q.    Does the City own the storage space in the  
23          aquifer?

24      A.    The City has a right to the water that's in the  
25          aquifer.

1 Q. But the City doesn't own the storage space,  
2 correct?

3 A. I don't know.

4 Q. And so you also don't know who would,  
5 hypothetically, who would conceptually own that  
6 storage space? You don't have an opinion on  
7 that either?

8 A. I don't understand your hypothetical, I don't  
9 know, I don't have an opinion on that.

10 Q. I think you already testified to this, but you  
11 don't have any knowledge about whether or not  
12 lowering the minimum index levels in the Equus  
13 Beds well fields, you don't have any knowledge  
14 about whether or not lowering that minimum index  
15 levels would impact the migration of the  
16 chloride plume? Have you done any research in  
17 that regard?

18 A. I haven't done any research.

19 Q. You haven't done any calculations with respect  
20 to the 1% drought; is that correct?

21 A. I have not.

22 Q. So any opinions with respect to the 1% drought  
23 would be purely your speculation; is that  
24 correct?

25 A. It would be based upon the work done by others.

1 Q. And whether or not the 1993 levels are a good  
2 limitation, would your opinions in that regard  
3 be based strictly upon the research or work done  
4 by others?

5 A. Depends upon what kind of work you are referring  
6 to. If you are talking about modeling it would  
7 be done by others.

8 Q. In other words, you haven't done any independent  
9 research in that regard; is that correct?

10 A. No.

11 Q. And as far as the mechanics of the aquifer  
12 maintenance credits, are you an expert on the  
13 mechanics of how those aquifer maintenance  
14 credits would operate or work?

15 A. What do you mean by mechanics?

16 Q. In other words, if I were to walk through how  
17 these aquifer maintenance credits would work  
18 conceptually, is that something that you are  
19 able to testify to?

20 A. Sure.

21 Q. So if we were to withdraw, if the aquifer is  
22 full, and the City uses the water in, pumps it  
23 directly from the Little Arkansas River, would  
24 that water then be used pursuant to a municipal  
25 use at that time?

1 A. Sure, it would either be injected in to the  
2 ground for future use, it could be sent directly  
3 to town for retreatment and immediate use.  
4 Sure.

5 Q. So if we are assuming the aquifer is full, the  
6 water has been sent directly to the City, you  
7 would agree that that water would be consumed at  
8 that point; is that correct?

9 A. Yes.

10 Q. And would you also agree with Mr. Pajor's  
11 testimony that if an aquifer maintenance credit  
12 is accumulated, that subsequent water would then  
13 be withdrawn from the aquifer?

14 A. There would be -- there could be a gallon of  
15 water drawn at some point in time that was left  
16 in as an offset for the water that was sent to  
17 town, yes.

18 Q. Is it the City's belief that the mechanics, as  
19 far as how that water, with respect to an  
20 aquifer maintenance credit, can be taken, is it  
21 the City's belief that that should be determined  
22 as at a later time? Or is that part of the  
23 subject of this hearing?

24 A. I am -- could you rephrase your question?

25 Q. Well, in other words, if aquifer maintenance

1 credits are accumulated, and then in the future  
2 the City can withdraw water, pursuant to those  
3 aquifer maintenance credits, is it the subject  
4 of this hearing to determine how and when that  
5 water could be withdrawn? Or is that subject  
6 matter to be determined at a later time?

7 A. Ask it one more time because I believe that  
8 would be -- well, please ask again.

9 Q. Okay. If we accumulate an aquifer maintenance  
10 credit, there would be a right, as you just  
11 indicated --

12 A. Right.

13 Q. -- to take future water out of the aquifer,  
14 correct?

15 A. Correct.

16 Q. My question is, under the conditions that that  
17 future water could be taken out of the aquifer,  
18 are those conditions part of this hearing today  
19 or would that be determined at a later time as  
20 far as what that would look like and how the  
21 City could take out that water?

22 A. There are no terms and conditions, as you  
23 described that, within the current proposal.

24 Q. Now, as far as determining whether or not  
25 lowering the minimum index levels would be good

1 for the aquifer, once again, you haven't done  
2 any research in that regard; is that correct?

3 A. Not directly.

4 Q. Okay. And you haven't done any research  
5 regarding whether or not water quality would be  
6 impacted in the aquifer; is that correct?

7 A. Not myself.

8 Q. And you haven't done any research about whether  
9 or not minimum desirable stream flows would be  
10 protected; is that correct?

11 A. I haven't done any research. I have reviewed  
12 work and read reports.

13 Q. And you haven't done any research about whether  
14 or not any kind of technical analysis to  
15 determine whether or not the City's proposal is  
16 in the public interest, correct?

17 A. I have opinions on that, but I haven't done the  
18 research or the modeling myself, no.

19 Q. In your expert report, on about the fourth page  
20 of your expert report, you indicate that short  
21 duration uses of ASR credits during drought will  
22 accelerate the plume's progress by as much as 40  
23 percent. Do you recall writing that in your  
24 report?

25 A. I recall that that's in the report, yes.

1 Q. So, in other words, when recharge credits are  
2 withdrawn, within a short period of time would  
3 you agree that your report says that that would  
4 accelerate the migration of that chloride plume  
5 by as much as 40 percent?

6 A. Yes.

7 Q. So at least in the sense of when that water is  
8 withdrawn in that narrow period, if the chloride  
9 plume is accelerated by 40 percent, if water is  
10 being taken out of the aquifer at that time,  
11 would you agree that, at least as it indicates  
12 in your expert report, in that particular point  
13 in time it would be a detriment to the aquifer?

14 A. Yes.

15 Q. As far as you would define it, would that cause  
16 impairment to the aquifer at that time?

17 A. I don't know what the concentrations would be or  
18 anything else. I have no idea.

19 MR. STUCKY: No further questions.

20 THE HEARING OFFICER: Ms. Wendling.

21 MR. OLEEN: Actually, if I may.

22 THE HEARING OFFICER: Yes.

23

24 CROSS EXAMINATION

25 BY MR. OLEEN:



1 Q. Mr. Henry, do you recall a line of questioning  
2 on cross examination, questioning by Mr. Stucky,  
3 on the potential affects of water quality if  
4 water levels are lowered to the current 1993  
5 permissible bottoms?

6 A. Yes.

7 Q. If you would please turn to GMD's Volume II  
8 notebook up there.

9 A. (Witness reviews documents).

10 Q. Once you have that Volume II if you would turn  
11 to what GMD has labeled as Exhibit 27.

12 A. Okay.

13 Q. Do you see that this document is titled,  
14 Memorandum of Understanding between GMD2 and the  
15 City of Wichita regarding Wichita's proposed ASR  
16 Phase II?

17 A. Yes, sir.

18 Q. If you turn to the last page of this document,  
19 do you see where it was signed by Carl Brewer,  
20 the mayor of Wichita?

21 A. Yes.

22 Q. And also signed by Bob Seiler, the president of  
23 GMD2.

24 A. Yes.

25 Q. Are you familiar with this document in any way?

1 A. I have seen it a time or two. It's been awhile.

2 Q. Do you recall the circumstances under which this  
3 document was executed between those two parties?

4 A. That would have been before my involvement.

5 Q. If we turn to numbers 5 and 6, in this document,  
6 do you see those?

7 A. I do.

8 Q. Do you see where Number 5, issue Number 5 asks  
9 how can the City protect domestic wells from  
10 changes and water quality standards? Do you see  
11 that?

12 A. Yes.

13 Q. Would you please read, to yourself, the answer  
14 in the form of a commitment there, and tell me  
15 if you recall that answer and having personal  
16 knowledge of it.

17 A. (Witness reviews document). Yes.

18 Q. Okay. Can you explain to me what this  
19 commitment from Wichita was at the time  
20 regarding this stated issue, Number 5?

21 A. The water that comes out of the tap in a home or  
22 a business served by a private domestic well, is  
23 just as important as the water that comes out of  
24 the tap of a customer of the city. The use of  
25 that water by them is just as critical as it is

1 for anyone. And the intent of this is to make  
2 sure that those individuals are protected from  
3 any degradation that activities by the City  
4 would cause, for certain wells.

5 Q. So is it the case that at the time this MOU was  
6 in force -- well, first let me ask you. Do you  
7 know is if this MOU is still in force?

8 A. I don't know whether it is or is not. I believe  
9 it is in the memo that it suggests, I don't know  
10 that it's a requirement, but suggests that there  
11 are periodic reviews and updates of the memo,  
12 and I don't know if that's ever occurred.

13 Q. Do I understand then that at the time this memo  
14 was executed, and at least to the extent that it  
15 was enforced, the City was making a commitment  
16 to certain domestic wells that might be affected  
17 by the City's Phase II ASR activity with respect  
18 to water quality; is that correct?

19 A. Absolutely.

20 Q. Moving on to the next issue, Number 6. Where it  
21 says: How will the City protect domestic water  
22 wells within 660 feet of a project recharge and  
23 recovery well from adverse drawdown impacts that  
24 may result in the operation of the well. Do you  
25 see that issue?

1 A. Yes.

2 Q. Would you read to yourself the subsequent  
3 commitment regarding that issue.

4 A. (Witness reviews document). Okay.

5 Q. Can you explain to me, in summarized form, what  
6 the City's commitment was with respect to that  
7 issue Number 6 regarding potential adverse  
8 drawdown impacts that may result from City's  
9 operations of an ASR well?

10 A. Sure. The City's commitment is to redrill or  
11 take other appropriate affirmative action to  
12 restore the productivity of such domestic well  
13 to the same rate and quality as it existed prior  
14 to.

15 Q. So at least at the time that this MOU was  
16 executed, and in force, the City was making this  
17 commitment to provide certain water quantity  
18 protections to certain domestic wells that may  
19 be affected by Wichita's usage of ASR wells; is  
20 that correct?

21 A. Absolutely. The City of Wichita is in the  
22 business of providing water to people, not  
23 taking water away. So we would continue that  
24 commitment under this proposal, and even be  
25 willing to formulate terms and conditions in the

1           permits, parallel to this or perhaps even better  
2           than this.

3       Q.    So when you say that Wichita would be willing to  
4           formulate permit conditions with respect to  
5           this --

6       A.    Yes.

7       Q.    -- you mean the proposal that we are considering  
8           here today?

9       A.    Absolutely.

10      Q.    Would you then also please turn with me back in  
11           the black binder to what has been previously  
12           marked as Wichita's Exhibit Number 21.

13      A.    Could you help me find that, please.

14                   MR. OLEEN:  If I may approach the  
15           witness?

16                   THE HEARING OFFICER:  Yes.

17      A.    If you could tell me which tab it is behind.

18      Q.    It is behind the tab Proposal Correspondence.

19                   THE REPORTER:  Just a minute, the  
20           notebooks are falling over.

21                               (A short off-the-record discussion  
22                               was held at this time.)

23      A.    Page 121.

24      Q.    Page 121.  Behind the tab Proposal  
25           Correspondence in the black binder it is

1           previously been marked Wichita Exhibit 21. It  
2           starts on Page 121. Are you there yet?

3       A.    Yes.

4       Q.    Do you recall this letter that we previously  
5           discussed that was from Alan King with Wichita  
6           to Chief Engineer Barfield?

7       A.    Yes.

8       Q.    Would you turn to Page 126 and paragraphs 12 and  
9           13.

10      A.    Yes.

11      Q.    Do you see those?

12      A.    Yes.

13      Q.    Does paragraph 12 of this letter essentially  
14           address the same water quality commitment that  
15           we just discussed that Wichita committed to in  
16           the MOU that we just discussed?

17      A.    It does.

18      Q.    And looking down then to paragraph 13, does that  
19           essentially address the same commitment that  
20           Wichita had committed to regarding domestic well  
21           quantity that was committed to in the MOU that  
22           we discussed?

23      A.    It does.

24      Q.    And just to be clear here today, do you know if  
25           these commitments that, I believe you just said

1           Wichita is still willing to commit to today; is  
2           that right?

3           A.    Yes.

4           Q.    Do you know if these particular commitments are  
5           enumerated in the proposal itself that we are  
6           talking about at this hearing?

7           A.    I am not certain, but I believe I recall that  
8           they are not.

9           Q.    Okay.  If they are not though, it is your  
10          testimony today that Wichita is agreeable to  
11          having such commitments that protect domestic  
12          well water quality and quantity in the ways that  
13          Wichita was previously committed to that Wichita  
14          is willing to have those also be imposed as  
15          conditions assuming this proposal is approved?

16          A.    Yes.  Hundred percent committed.

17                   MR. OLEEN:  If I may approach, Madame  
18                   Officer, I would like to label the memorandum of  
19                   understanding as GMD's Exhibit 27.

20                   THE HEARING OFFICER:  That's fine.

21                   MR. OLEEN:  And also ask that it be  
22                   admitted.

23                   (GMD Exhibit 27 was marked for  
24                   identification by the Reporter.)

25                   THE HEARING OFFICER:  Any objections?

1 GMD 27 is admitted.

2 MR. OLEEN: No further questions.

3 THE HEARING OFFICER: Ms. Wendling.

4

5 CROSS EXAMINATION

6 BY MS. WENDLING:

7 Q. Mr. Henry, regarding these terms in the MOU Mr.  
8 Oleen was just asking you about, there is a 660  
9 feet limitation on the quantity issues. If it's  
10 shown that water quality or quantity for  
11 domestic well users have impacted beyond the 660  
12 feet, is the City similarly committed to  
13 resolving those issues?

14 A. Beyond 660 feet, I have no opinion on that at  
15 this time. I think we are open to  
16 considerations.

17 Q. Okay. What burden does the City anticipate  
18 these individuals are needing to prove in order  
19 to show that the quantity or quality is  
20 impacted?

21 A. That is problem with the MOU, there is a nod  
22 that the City will take certain actions, but  
23 there is no framework or anything that says how  
24 it would be triggered or handled. I could  
25 imagine in such a way that if there is a way to



1 predict, right, based upon sound science, we all  
2 agreed on, and it is reasonable to believe it is  
3 going to happen, that we would, we want to  
4 prevent it from happening. I can't sit here  
5 today and tell you how that would work, but it  
6 would be a desire to keep people, you know,  
7 let's not wait until they run out of water,  
8 let's fix their well ahead of time.

9 Q. The City is willing to take a proactive approach  
10 to preventing any quality or quantity issues?

11 A. Absolutely.

12 Q. To your knowledge has the City done any analysis  
13 to understand the number of wells or users that  
14 might be impacted?

15 A. I am not aware of any. I know that we have done  
16 some work in regards to agriculture wells, I am  
17 not sure about domestic wells.

18 Q. If I could turn your attention to City Exhibit  
19 19, which is in the black binder under Proposal  
20 Correspondence.

21 A. Okay. Which page?

22 Q. I will be on Page 5. I believe it was either  
23 you or Mr. Pajor who testified that this  
24 proposal is before us due to a change in use of  
25 the ASR program to drought planning; is that

1 correct?

2 A. Correct.

3 Q. Can you read the first sentence on Page 5 of  
4 Exhibit 19, which is dated May 2013.

5 A. Phase II of the ASR project was implemented with  
6 goals of supply, development, restoration of the  
7 Equus Beds as a resource, and to provide as a  
8 sustainable water supply during periods of  
9 drought.

10 Q. So according to that sentence, Phase II was also  
11 designed to provide water during a drought?

12 A. Phase II was, yes.

13 Q. Could we now go back, still in the black binder  
14 Exhibit 1, which was your proposal. I believe  
15 2-1.

16 A. I am sorry, 2?

17 Q. 2.1.

18 A. Okay.

19 Q. Okay. And you will see a table 2-1 on that same  
20 page regarding the drought response plan.

21 A. Yes.

22 Q. And it says various triggering points for the  
23 stages in the drought plan; is that correct?

24 A. Yes.

25 Q. Do you have data on how often stages 1, 2, 3 or

1 4 of the drought response plan would be  
2 triggered based upon historical genealogy  
3 levels?

4 A. The City has some data, yes.

5 Q. Do you know if that has been included in the  
6 proposal or attachments?

7 A. I don't know.

8 Q. Now, if we turn to the Exhibit A of the  
9 proposal, which if you are still in the black  
10 binder you go to the orange attachments tab,  
11 it's the first attachment.

12 A. Okay.

13 Q. We discussed yesterday that the goal of the  
14 proposal is to prevent the City from needing to  
15 enact stages 3 and 4 in the event of a 1%  
16 drought, is that also your understanding?

17 A. Correct.

18 Q. Were you involved in preparing this document?

19 A. I was not.

20 Q. If you go to Page 6 under stage 3, can you read  
21 the third bullet point on the right.

22 A. Eliminate irrigation on city owned grasses that  
23 are not exempted due to the economic activity  
24 they create.

25 Q. So is it your understanding that during a 1%

1 drought, because we are successful in not going  
2 to stage 3, irrigation would be able to  
3 continue?

4 A. I am sorry, would you repeat your question?

5 Q. If the City has not yet triggered stage 3,  
6 irrigation would be able to continue, is that  
7 what that bullet point means?

8 A. (Witness reviews document). I think what the  
9 bullet point says is eliminate irrigation on  
10 city owned grasses that are not exempted due to  
11 economic activity. The City of Wichita at the  
12 time that the drought response plan was being  
13 developed also included some other measures that  
14 were just internal objectives, so to speak,  
15 weren't part of the formal plans and commitments  
16 that were made at that point in time. And some  
17 of those measures were likely more restrictive  
18 than what was put on the public.

19 Q. I actually had you read the wrong one. Would  
20 you read the third bullet point on the left-hand  
21 column for utility.

22 A. For customers?

23 Q. Yes.

24 A. Yes. Exceptions provided for businesses  
25 generating economic activity directly from

1 outdoor irrigation.

2 Q. So understanding that, it's not until stage,  
3 well, at stage 3 there are exceptions for  
4 irrigation?

5 A. There are exceptions for the irrigation  
6 restrictions under stages 2 and 3.

7 Q. Okay. Let's go back to Page 4 where we talk  
8 about stage 2. Under utility customers.

9 A. Yes.

10 Q. Do you see restrictions on irrigation under  
11 that, under stage 2, actions utility customers.

12 A. (Witness reviews document). Are you saying do I  
13 see restrictions?

14 Q. On irrigation.

15 A. Outdoor water usage is prohibited from 10:00  
16 a.m. to 8:00 p.m. on all days. It is not  
17 allowed at all on Saturdays, Sundays or Mondays.

18 Q. All right. And then there is, that would be,  
19 well, there are no exceptions?

20 A. There are exceptions under stage 2, I don't know  
21 that they are stated here, but under stage 2 and  
22 stage 3 there are exceptions for those  
23 businesses where there is economics involved  
24 with outdoor watering.

25 Q. Do you believe there is economic benefit to

1 agriculture production using irrigation?

2 A. Absolutely.

3 Q. Mr. Stucky asked you several questions about  
4 water supply options, and this was in City's  
5 Exhibits 17 and 18 of the water supply  
6 PowerPoint presentation. And in those documents  
7 several water supply options were identified; is  
8 that correct?

9 A. I believe there were some concepts of some  
10 options, yeah.

11 Q. Would you agree with the statement that the City  
12 has water supply alternatives other than the  
13 current proposal to meet their needs during a  
14 drought?

15 A. There were other alternatives considered,  
16 whether they were feasible or not.

17 Q. But there are other options?

18 A. There could be other options.

19 Q. He also asked you about the minimum index level,  
20 is it your understanding that the minimum index  
21 levels should be based on the amount of water  
22 the City wants to access?

23 A. No.

24 Q. Should the minimum index levels be based on an  
25 analyzed level demonstrated to show a

1           sustainable and healthy aquifer?

2       A.    Yes.   The minimum index levels would be in place  
3           to allow the City to operate in such a way that  
4           higher aquifer levels would be an outcome.

5       Q.    And Mr. Stucky also asked you if the City owns  
6           the storage space in the aquifer, and I believe  
7           you did not have an answer; is that correct?

8       A.    Well, my answer was that the City has rights to  
9           access the water that's within that storage  
10          space.

11      Q.    Access.   A right to access the water does not  
12          mean you own the property that might be above  
13          the water; is that correct?

14      A.    Sure.

15      Q.    And do you own property in Kansas?

16      A.    I do not.

17      Q.    You do not.   Are you familiar with the property  
18          rights in Kansas?

19      A.    Somewhat.

20      Q.    Do you know how far above or below the surface  
21          level of property right extends?

22      A.    I do not.

23      Q.    Going back to the proposal once again, 3-4 of  
24          the proposal, still in the black binder, it has  
25          the proposed permit conditions.   You have

1 testified regarding --

2 A. I am sorry, where are we in the black binder?

3 Q. The black binder, the red tab Page 3-6.

4 A. (Witness reviews documents). 3-6; is that  
5 correct?

6 Q. Correct.

7 A. Okay.

8 Q. Of the permit conditions listed on Page 3-6 do  
9 you see a permit condition that limit of AMCs  
10 only during a period of drought?

11 A. No.

12 MS. WENDLING: I have no further  
13 questions.

14 THE HEARING OFFICER: Mr. McLeod.

15 MR. McLEOD: Before I begin redirect  
16 would it be possible to take a short five-minute  
17 recess?

18 THE HEARING OFFICER: Of course. Off  
19 the record.

20 (REPORTER'S NOTE: At this time,  
21 11:07 a.m., a recess was taken,  
22 after which, 11:15 a.m., the following  
23 proceedings were held:)

24 THE HEARING OFFICER: Back on the  
25 record after a short break.



1

2

REDIRECT EXAMINATION

3

BY MR. McLEOD:

4

Q. Mr. Henry, Mr. Stucky had asked you if you take  
5 1,000 feet of acre feet from the aquifer was the  
6 aquifer reduced, I think you agreed it was. If  
7 you take that 1,000 acre feet from the aquifer  
8 and you don't put it back, the next year is the  
9 aquifer still lower than if you had not taken  
10 that 1,000 acre feet?

11

A. Sure.

12

Q. You had indicated in response to questions as  
13 well that there are not conditions currently in  
14 the proposal document itself as to when, and the  
15 circumstances under which AMC credits could be  
16 withdrawn; is that correct?

17

A. Yes.

18

Q. And Mr. Stucky had asked you, I think he  
19 intended to ask you, whether the purpose of this  
20 hearing was perhaps to decide those conditions.  
21 And so I will phrase the question this way, if  
22 you remember, for example, the discussion during  
23 Mr. Pajor's testimony yesterday about a  
24 potential condition to provide, in some fashion,  
25 that the AMCs would be drawable under certain

1           circumstance or extent of defined drought, if  
2           the Hearing Officer found that that was an  
3           appropriate condition that should be included in  
4           any permit, can she find that and include such  
5           condition as part of this hearing?

6       A.    Of course.  Terms and conditions of the permits  
7           under this proposal, absolutely.

8       Q.    And equally, I mean, if she found that well  
9           protections, parallel to those that were  
10          provided in the old MOUs were appropriate, she  
11          could include those?

12      A.    Sure.

13      Q.    Mr. Stucky had asked you if at the moment that  
14          you draw a credit, and thereby, reduce the  
15          aquifer, if at that moment that is a detriment  
16          to the aquifer; and my question on the converse  
17          of that assumption is, is it a benefit until  
18          that credit is drawn that you waited to draw it?

19      A.    Sure.

20      Q.    If you wait long enough, and the drought is over  
21          and you don't have to draw it at all, is that a  
22          benefit?

23      A.    Yes, that results in higher aquifer levels, you  
24          bet.

25      Q.    Is there any benefit to making the City draw

1           that credit and create the detriment earlier  
2           than it needs to to satisfy its water needs?

3       A.    No.   That would be undesirable.

4       Q.    Ms. Wendling I think had pointed out in terms of  
5           the discussion of how much redirection this  
6           drought scenario is in ASR Phase II, that  
7           drought supply was one of the purposes mentioned  
8           as being a purpose of ASR Phase II initially.

9                   My question, to help clarify, is it  
10           really more accurate to say that that drought  
11           purpose has become more important with the  
12           changes and circumstances for ASR Phase II?

13      A.    Absolutely.   That's the value of the ASR Phase  
14           II credits are for additional supply during  
15           prolonged drought.

16      Q.    Mr. Stucky had asked you a question, actually a  
17           short series of questions, about statements that  
18           Mike Jacobs had made about reducing index levels  
19           from the 1993 levels for the Phase I project not  
20           being in the public interest.   Was that very  
21           specific to the Phase I facilities?

22      A.    Yes.

23                   MR. McLEOD:   I don't have further  
24           questions.

25                   MR. OLEEN:   Thank you, but no

1 questions.

2 THE HEARING OFFICER: Okay. Mr.  
3 Stucky.

4 MR. STUCKY: Thank you.

5

6 RE CROSS EXAMINATION

7 BY MR. STUCKY:

8 Q. Just a few additional questions. A moment ago  
9 you were asked about an MOU, which is Exhibit 27  
10 in the District's notebooks. Do you recall that  
11 line of questioning by Mr. Oleen?

12 A. Yes.

13 Q. And Mr. Oleen, I believe in his line of  
14 questioning, was drawing parallelism between  
15 Exhibit 21, which was the letter from Jacobs and  
16 that MOU, do you recall those questions?

17 A. Yes. I don't recall whether the letter was from  
18 Mr. Jacobs or Mr. King.

19 Q. My mistake. Yes, Exhibit 21 that letter was  
20 from Mr. King. But would you agree that Mr.  
21 Oleen was asking you questions with respect to  
22 the parallelism between that letter and the MOU?

23 A. Yes.

24 Q. And, in fact, in this letter from Mr. King, he  
25 indicated that the City was committed to

1 maintaining the water quality of domestic wells  
2 within 660 feet of ASR physical recharge sites.  
3 Would you agree that's what is stated in that  
4 letter?

5 A. Yes.

6 Q. I ask that you flip in the Volume II of the  
7 GMD's exhibit notebooks to Exhibit 27.

8 A. (Witness reviews documents). Okay.

9 Q. With respect to commitment Number 5, you  
10 indicated that commitment Number 5 indicated  
11 that it's designed to target water quality. Is  
12 that the commitment with respect to water  
13 quality?

14 A. Yes.

15 Q. Can you read the commitment, in commitment  
16 Number 5 in the Memorandum of Understanding, and  
17 show me where it references 660 feet as far as  
18 protecting water quality only within 660 feet of  
19 domestic wells.

20 A. Issue Number 5 in regards to water quality does  
21 not reference 660 feet.

22 Q. So, in other words, there is a difference  
23 between the Memorandum of Understanding on one  
24 hand, and this letter from Mr. King on the other  
25 hand, in the sense that at least with respect to

1 the Memorandum of Understanding, it was designed  
2 to protect water quality for the whole aquifer,  
3 would that be an accurate statement?

4 A. It doesn't say aquifer, but it also doesn't list  
5 any separation distances.

6 Q. Well, does it say in the very second line, let's  
7 see, does it say in the very first line that  
8 it's for all future domestic wells and existing,  
9 all existing and future domestic wells, is that  
10 what it states?

11 A. Are you referencing the letter?

12 Q. I am referencing the first line of the  
13 commitment. It says water quality or future and  
14 existing wells, is that what it says?

15 A. It does.

16 Q. So as far as you the just plain reading of that  
17 language, does it appear that the commitment is  
18 to protect all existing and future domestic  
19 wells throughout the well field, is that what  
20 that commitment appears to state?

21 A. It doesn't say anything spatially, it just  
22 references future domestic wells.

23 Q. At the very least, it doesn't limit it to  
24 domestic wells to 660 feet of the recharge  
25 sites; is that correct?

1 A. Correct.

2 Q. Yesterday Mr. Pajor indicated that it was  
3 important that if spacing waivers were granted  
4 that those, that those conditions under which  
5 they were granted were important conditions, do  
6 you recall that testimony?

7 A. Yes.

8 Q. Would you also agree that those conditions under  
9 which those, any spacing waivers were granted  
10 for ASR Phase II, were important conditions?

11 A. Yes.

12 Q. Would you also agree that to the extent those  
13 spacing waivers were granted, and those  
14 conditions are in place, those same conditions  
15 should also apply to this AMC proposal?

16 MR. McLEOD: Do we mean for those wells  
17 that the spacing wells were granted for?

18 MR. STUCKY: Yes.

19 A. Yes.

20 BY MR. STUCKY:

21 Q. Would that also apply to a consideration of  
22 lowering the minimum index levels, those same  
23 conditions?

24 A. Yes.

25 Q. And, in fact, if we were to move back to

1           commitment Number 5 on that page in front of  
2           you, just a minute, I lost my spot, does it at  
3           least somewhere in Memorandum of Understanding  
4           indicate that the conditions under which spacing  
5           waivers are granted are important conditions  
6           that should be honored?

7           A.    I think that's a reasonable assumption.

8           Q.    If we were to turn to Page 3, under B-1, and if  
9           we look at --

10          A.    Hold on just a second, you said under -- these  
11          page numbers aren't numbered.

12          Q.    I am sorry.  It's one, 2 --

13          A.    B-1, I found it.

14          Q.    B-1.

15          A.    Yes.

16          Q.    And if we, could you read the last line of that  
17          particular commitment.

18          A.    Sure.  A petition for waiver of the well spacing  
19          requirement shall be submitted to GMD2 and shall  
20          be granted by GMD2 upon finding that the  
21          conditions set out above do exist and that the  
22          granting of the waiver will not unreasonably  
23          impair the public interest.

24          Q.    So, in other words, those conditions are  
25          essential conditions and those conditions should



1           be honored with respect to how those spacing  
2           waivers were granted; is that correct?

3       A.    Yes.

4       Q.    If I heard your testimony correctly when you  
5           were responding to Ms. Wendling just a moment  
6           ago, I believe you said that although the City  
7           is committed to protecting domestic wells within  
8           660 feet of the City's recharge wells, the City  
9           could do more. Is that what your testimony was?

10      A.    I don't know if it could do more. I mean, you  
11           are trying to tie that to 660 feet. I don't  
12           know if that's what I said.

13      Q.    I am asking you, is the City committed to  
14           protecting domestic wells beyond 660 feet,  
15           that's my question.

16      A.    Beyond 660 feet? I don't know.

17      Q.    What's the total authorized quantity of all of  
18           the City's existing water rights?

19      A.    I don't know that off the top of my head.

20      Q.    What total population does the City serve  
21           including all wholesale sites to other cities?

22      A.    Roughly 500,000.

23                   MR. STUCKY: I don't have any further  
24           questions.

25                   THE HEARING OFFICER: Ms. Wendling.

1

2

FURTHER RECROSS EXAMINATION

3

BY MS. WENDLING:

4

Q. In keeping with the goal of maintaining a fuller  
5 aquifer whenever possible, has the City  
6 considered utilizing all of their Cheney rights  
7 prior to pumping from the Equus Bed?

8

A. Not to my knowledge.

9

Q. And do you know who decided that the goal of  
10 drought planning should be to survive a 1%  
11 drought without triggering stages 3 and 4 of the  
12 drought plan?

10

11

12

13

A. That's policy direction that's handed out by  
14 council, the City Council.

14

15

MS. WENDLING: No further questions.

16

THE HEARING OFFICER: Mr. McLeod.

17

MR. McLEOD: I don't have further

18

questions for the witness.

19

THE HEARING OFFICER: Are there any

20

further questions for Mr. Henry? Okay. Hearing

21

none, Mr. Henry, you are excused. It's 11:30.

22

Do we wish to take an early lunch break or

23

should we proceed for about another 30 minutes

24

to an hour?

25

MR. STUCKY: I would prefer to proceed.

1 THE HEARING OFFICER: Go ahead. Mr.  
2 McLeod, next witness, please.

3 MR. McLEOD: City will call Scott Macey  
4 to the stand.

5 SCOTT MACEY,  
6 was thereupon called as a witness herein, and  
7 after having first been duly sworn to testify to  
8 the truth, the whole truth and nothing but the  
9 truth, was examined and testified as follows:

10

11

DIRECT EXAMINATION

12

BY MR. McLEOD:

13

Q. Please state your name for the record.

14

A. Scott Macey.

15

Q. Mr. Macey, do you have any post secondary  
16 educational degrees?

17

A. I have a Bachelor of Science in civil  
18 engineering from the University of  
19 Missouri-Rolla.

20

Q. Do you have any professional licenses or  
21 registrations?

22

A. I am a registered professional engineer in the  
23 State of Kansas.

24

Q. Where are you employed?

25

A. With the City of Wichita in the public works

1 division.

2 Q. And how long have you been employed with the  
3 City?

4 A. Since late 2014.

5 Q. What is your title at the City?

6 A. I am the water resources engineer.

7 Q. And what's the nature of that job?

8 A. I make recommendations to our upper management  
9 in terms of the available water supplies that we  
10 have, analyze the trends in water demands that  
11 are occurring and may occur. Operate the  
12 competition models to inform them as to the  
13 direction those trends might go.

14 Q. How have you been involved with the City's  
15 proposal?

16 A. I have the responsibility for the initial  
17 demands placed on the aquifer in the later  
18 portion, or the latter portion of the proposal's  
19 construction. That's a product of lots of  
20 modeling on my part to minimize the use of the  
21 ASR credits. My modeling exercise different  
22 water resources during the drought of record.  
23 And with the goal of minimizing the ASR credits,  
24 as they are the most expensive for us, and also  
25 to maximize the other resources as the water

1 plan will allow.

2 Q. So the demand projections that have been  
3 discussed, and the testimony of Mr. Pajor, for  
4 example, when he was on the stand, were you the  
5 person who put together the demand projections  
6 for purposes of the proposal?

7 A. I put together the demand projections that were  
8 placed on the Equus portion of the proposal.  
9 Those were constructed as the result of the  
10 efforts of my other work in the MODSIM  
11 simulations.

12 Q. Okay. And I was going to ask you that question,  
13 whether the MODSIM DSS was the model that you  
14 referenced?

15 A. Yes. That's one of the models that I operate.

16 Q. Is that the model you would have used to  
17 optimize resources to meet demand?

18 A. Yes, sir.

19 Q. And just to fill out the record on that, when  
20 you use the term optimize, what do you mean?

21 A. Try to minimize the use of the ASR credits,  
22 maximize the use other renewable credits that  
23 occur each year as a part of our water rights.

24 Q. What's the purpose of minimizing the amount of  
25 ASR credits used?

1 A. Well, first of all, they would have to be  
2 accrued. And that is uncertain at this point.  
3 And then also the initial cost of the creation  
4 of that water. Long term, the projections for  
5 gathering that water from the river are even in  
6 question because of the potential climate  
7 change.

8 Q. Is there a consideration when you optimize  
9 resources of keeping Cheney useful under all  
10 circumstances?

11 A. I am sorry, ask that again.

12 Q. When you are optimizing resources, is one of the  
13 considerations to keep Cheney accessible and  
14 usable in all circumstances?

15 A. Yes. As a part of our water resources it is  
16 important that Cheney stay available as the  
17 other water rights we have will not meet our  
18 base water demand in the City. Even during a  
19 normal year. So Cheney is very important every  
20 year and immensely more important during drought  
21 conditions.

22 Q. In your modeling, do you also adjust different  
23 assumptions on the blending of the water  
24 resources from Cheney and the Equus Beds?

25 A. I will speak a little bit to the model that was

1 given me by High Country by John Winchester, who  
2 testified to that earlier. When that model was  
3 given to me there was no adjustment of the  
4 proportion of the water resources taken from  
5 either Cheney, Equus, or the surface water  
6 sources during the model droughts that had been  
7 done to date, at the time that model was given  
8 to me.

9 With his support, and through months of  
10 interaction, I made modifications to code that  
11 allowed for the model to make changes as drought  
12 progressed, and Cheney was depleted, that less  
13 use of Cheney was made and more of the aquifer.  
14 For example, the upper 80% of Cheney might be, I  
15 am sorry, I will converse this, invert this a  
16 little bit. For example, the upper 10% of the  
17 resources available to us with Cheney would be  
18 utilized at a rate of four to one. Four parts  
19 of Cheney to one part Equus Beds aquifer. As  
20 Cheney depletes, as the drought proceeds, that  
21 gets adjusted and goes back to more of a 60|40  
22 blend. If Cheney were to deplete any further it  
23 gets to be equal. And that's sort of coding.  
24 The specifics I can get in to, if necessary.

25 Q. Basically as you have less volume in Cheney to

1 work with, you are having to commensurately take  
2 more water from the Equus Beds because the  
3 City's demand is what it is?

4 A. Yes.

5 Q. And you mentioned that Mr. Winchester had worked  
6 with you for a period of weeks, and that he  
7 reviewed your modifications. Did Mr. Winchester  
8 also provide training to you for the use of the  
9 MODSIM DSS model?

10 A. In person, no. Over the phone and via E-mail,  
11 yes.

12 Q. And did you also, at times, work with the two  
13 people that he had trained in person when you  
14 were doing modeling with that MODSIM DSS?

15 A. Yes.

16 Q. What are the basic assumptions of the modeling  
17 you did for the proposal?

18 A. Well, I think the first and most important is  
19 the projected demand during the drought that I  
20 was attempting to model. Those demands were, as  
21 I have indicated in my expert report, accepted  
22 from the 2013 demand study, I don't know if  
23 that's an exhibit yet or not. I am sorry, it  
24 is. It's Exhibit 1. The demand study by SAIC  
25 establishes a demand for the year 2060 and that



1 has been utilized for all of the work done by  
2 John during the time of his work with the model.  
3 I think he even alludes to that model or  
4 references that work.

5 Then those demands, as projected out at  
6 that future date, were adjusted during the  
7 drought simulation to reflect that, in fact,  
8 demanding our users to cut their use. So the  
9 model, modifications that I made also reflected  
10 that change of conditions. That our users are  
11 cutting their daily demand by the, I am not  
12 certain, the numerical values are cited in the  
13 drought response plan and I could refer to those  
14 at some point, if needed.

15 Q. Let's look at section 2.2 in the proposal.  
16 What's the subject matter addressed in that  
17 section, Mr. Macey?

18 A. It's the future raw water demand assessment that  
19 I spoke to.

20 Q. So is that section of the proposal, is it based  
21 on your work product?

22 A. That's correct. I am sorry, let me evaluate  
23 that first. It cites the SAIC and PEC  
24 projections, the scenarios, the recommendations  
25 to go with the medium growth. I will concur

1 with the thought that the City believes the  
2 medium growth productions may be further reduced  
3 by utilizing conservation measures; so, yes, to  
4 that portion can be attributed to me.

5 Q. Did you review those 2013 demand assumptions  
6 that the SAIC study to determine whether you  
7 needed to make changes for purposes of what you  
8 were doing?

9 A. Yes, I did review them.

10 Q. And did you conclude that you needed to make any  
11 changes or adjustments to their demand  
12 projections to account for the three years that  
13 had passed?

14 A. No.

15 Q. And in your modeling, not simply within the  
16 context of the drought scenario, did you make  
17 any more general assumptions<sup>1</sup>, about  
18 conservation both in normal times and in drought  
19 times, and the affect that conservation over  
20 time might have on a water demand?

21 A. Well, in our strategic plan it was delineated  
22 that we would continue to, as policy, adhere to  
23 a .35% annual reduction over time. So that  
24 future demand that was laid out by SAIC was  
25 modified to match that. I am sorry if I didn't

1 say that earlier.

2 Q. As we heard in Mr. Henry's testimony, at least  
3 in the period that he was looking at in his  
4 testimony, we did a little bit better than the  
5 .35 target on conservation on that year?

6 A. Yes.

7 Q. What are the specific types of conservation  
8 efforts that you took into account?

9 A. The specific types of conservation?

10 Q. The conservation efforts of the city, if you  
11 could describe those for us.

12 A. Well, there's future reuse that is, that has  
13 been contemplated. There are continued annual  
14 investments in to the conservation plans. Those  
15 really were not a part of my work, but the  
16 numerical outcome of those efforts were.

17 Q. I think we already admitted in one of the  
18 exhibits the strategic plan document from the  
19 purple binder, just in case, would you go to the  
20 purple binder to the strategic plan document.

21 A. Okay.

22 Q. And actually I think the title may be water  
23 master plan, the document that I may be thinking  
24 of. I am sorry, it is strategic plan in the  
25 purple binder.

1 A. (Witness reviews documents).

2 Q. Looking at the pages there from 28 to 31 can you  
3 describe what they are?

4 A. Yes, I am sorry, 28 at the bottom there is a  
5 section that starts water supply. It continues  
6 to discuss.

7 MR. STUCKY: Excuse me, we don't have,  
8 I am not sure of the page, Exhibit 9, City's  
9 original Exhibit 9? Is that what we are  
10 referring to?

11 THE HEARING OFFICER: Is it that  
12 (indicating)?

13 MR. McLEOD: Yes. Yes, it is, thank  
14 you.

15 MR. STUCKY: Thank you.

16 BY MR. McLEOD:

17 Q. Okay.

18 A. You asked me a question of what this is. I  
19 think I can identify, I can identify some of the  
20 components. Again, it reiterates the concern  
21 for 1% drought, the annual conservation  
22 estimation or plan for .35%, our drought  
23 protection goal for 2060. It contemplates the  
24 other water supply options that were considered  
25 as well as compares the 1% drought with and

1 without those new supplies considered and  
2 additional information graphically.

3 Q. And just to clean up from my moment of  
4 confusion, that is the document that we  
5 previously had admitted as City's 9; is that  
6 correct?

7 A. Yes.

8 Q. Exhibit 9?

9 A. That's correct.

10 Q. If you would turn to section 2.3 in the  
11 proposal.

12 A. Okay.

13 Q. Can you explain your contributions to the  
14 modeling presented in that section of the  
15 proposal?

16 A. Well, again, it discusses the MODSIM DSS, the  
17 drought model that was given by John Winchester.  
18 My contributions were the implementation of the  
19 future demand as adjusted for planned  
20 conservation. And that results in future  
21 projected demand of 81,690 acre feet in 2060. I  
22 don't think it speaks directly to the changing  
23 resource apportionment. But my modeling also  
24 accommodates the limitations on the water  
25 rights, so if within the one year the water

1 right for Equus or Cheney hits its peak it's cut  
2 off for the remainder of that year.

3 That was an additional modification I  
4 made to the model so that the water rights were  
5 established that had been established are  
6 implemented. And then also similar application  
7 with the ASR credits. If ASR credits are used  
8 they are capped in their annual quantity and  
9 their rate. That modification was implemented  
10 by me. The initial stage of Cheney I think is  
11 misstated here. All my modeling for this  
12 drought was with the initial condition of Cheney  
13 of 100%.

14 Q. And what does it, what does the typo suggest  
15 instead?

16 A. It says 110% flow.

17 Q. So the correction would be of that 110 to 100%?

18 A. Yes. I limited the ASR credits to a maximum of  
19 60,000. Actually I kind of worked the other  
20 direction to minimize that number. The local  
21 well field described here as the E&S well field  
22 is not considered a firm source during drought.  
23 It was utilized as a source whenever there was  
24 water in the Arkansas River in town, those  
25 portions of the model were exercised and the,

1 and so that could be quantified. But it was a  
2 minimal amount.

3 The Bentley reserve, similarly,  
4 whenever there was stream flow available in the  
5 Bentley reserve field the model capitalized in  
6 that surface water supply. Again, it was  
7 drought, so there wasn't a lot.

8 The hydrological components, those were  
9 utilized as established by John in the model  
10 already, stream flow as he built them. As he  
11 constructed them. And I would say that the  
12 table 2.3, which I assume you consider to be  
13 part of section 2.3, those numerical values for  
14 the City demand the apportionment to the aquifer  
15 in Cheney are correct. However, I, again, I  
16 can't justify that number in the final row of  
17 that chart. I don't believe that's  
18 representative of calculations I did.

19 MR. STUCKY: Could the witness clarify  
20 which final number.

21 A. Go up. No, sorry. Down. Cheney % percent of  
22 conservation pool, again my model started with  
23 hundred percent full, and that first column is  
24 intended to represent a 12 month average,  
25 assumption is the pool would not be 110% of

1 starting, long term average would not be 110%,  
2 so I am starting at 100%, that first column  
3 doesn't represent reality, but the rest of the  
4 numbers, like I said, I can't justify; but the  
5 remainder of that table that is in alignment  
6 with the work that I did.

7 Q. Mr. Macey, when you ran modeling for the drought  
8 scenario at what point did your modeling show  
9 index levels declining below the 1993 levels in  
10 the drought?

11 A. That varied by the index cell, but that was a  
12 different model you are referring to. And that  
13 is work done by another consultant.

14 Q. Okay. Would that be Mr. Clement's work?

15 A. Yes. Amongst others.

16 Q. Were modifications that you made to the MODSIM  
17 DSS model, for purposes of your work, peer  
18 reviewed?

19 A. Yes.

20 Q. And by whom?

21 A. John Winchester from High Country Hydrology,  
22 Burns & McDonnell similarly. And then  
23 additionally I reached out to the user net of  
24 the software at Colorado State and interchanged  
25 modeling program changes with them to try to



1 diagnose why something wasn't working.

2 I would also list further on that  
3 chart, I wanted to point out, I just noticed on  
4 figure 2. Daniel, could you pull that up? On  
5 this graphic right here, I think this quantifies  
6 my statement that my modeling started with the  
7 initial pool of Cheney at 100%. As you can see  
8 there it starts at 167,000 acre feet and then  
9 declines from there.

10 This graphic similarly shows heavy use  
11 of the Cheney resource in the first couple of  
12 years of drought. And then as we enter in to  
13 the second and third year you can see that line  
14 flat lines. And that's because it came as the  
15 product of the model's change of resources at  
16 that point in time. I am sorry, I wanted to  
17 back up on that.

18 Q. Thank you. That's actually helpful. Were any  
19 points of clarification anticipated after the  
20 proposal was submitted?

21 A. I would assume, yes. That was the interaction.  
22 To set this up, I started working with GMD2  
23 early 2016, and interacting with them, showing  
24 my preliminary work for this model and  
25 preliminary model from the MODSIM model, which I

1           wasn't an expert at, but I was learning, that  
2           showed those concerns and quantified those  
3           concerns. And through that process I was  
4           establishing a working relationship figuring we  
5           were going towards something we could agree to  
6           that represented the conditions of the aquifer.  
7           Reasonable assumptions the City is making so  
8           that eventually this process could take place.  
9           And then, so, yes.

10                         With that as a preface, the assumption  
11           was, as this proposal went out in its multiple  
12           different generations, yes, we would continue to  
13           see refinement.

14   Q.    The figure 2 that you referred to, does that  
15           show that in the 1% drought, as you modeled the  
16           scenario using both credits and reductions of  
17           demand, you could get to the end without  
18           depletion of Cheney Reservoir?

19   A.    Yes. You could see the graphic doesn't go, that  
20           the Cheney Reservoir storage doesn't drop below  
21           60, 62,000 acre feet.

22   Q.    Were the demand projections that you referred  
23           to, were they also evaluated in section 3 of the  
24           2016 water master plan?

25   A.    I assisted in the creation of that document, Deb

1 Aoy and I worked with Burns & McDonnell during  
2 that document. Has that been submitted?

3 Q. That document is part of Exhibit 1, I believe,  
4 let me check. Actually I think it has not yet  
5 been.

6 (City Exhibit City 22 was marked for  
7 identification by the Reporter.)

8 THE HEARING OFFICER: What document is  
9 that?

10 MR. McLEOD: The water master plan in  
11 the white binder behind the tab that says water  
12 master plan.

13 MR. ADRIAN: Is it a portion of the  
14 proposal?

15 MR. McLEOD: It is not. It's a  
16 separate document.

17 BY MR. McLEOD:

18 Q. Mr. Macey, could you identify the document that  
19 has been marked as City 22?

20 A. Yes, sir, that's the 2016 Water Master Plan as  
21 generated by Burns & McDonnell.

22 Q. And if you would turn to section 3 of the water  
23 master plan, actually going by page first to  
24 Page 3-6 within the plan.

25 A. Okay.

1 Q. Sections 3.6.2 and sections 3.6.3, explain the  
2 information that's set forth there.

3 A. This is part of the Burns & McDonnell  
4 implementation of future water projection. It  
5 is kind of a subcomponent of their projection.  
6 I can elucidate further on this document, if  
7 needed, if that is appropriate.

8 Q. Please go ahead.

9 A. For context, and it's discussed elsewhere in  
10 here in the section 3.6.6, the document Page  
11 3-8, they go on to state effectively that the  
12 2013 water demand assessments were referenced  
13 and that their projections correspond with what  
14 I utilize, which is the 2013 medium growth  
15 production from that study. The 2013 growth  
16 study was based on a population growth pattern.

17 This particular projection prepared by  
18 Burns & McDonnell, utilized that as a comparison  
19 and, however, prepared a projection based on  
20 meter numbers and anticipating that the engine  
21 of economic growth in Wichita was the additional  
22 residential spread, if you want to call it that,  
23 of the City, as represented by that meter growth  
24 or meter addition pattern. Also informed by  
25 anticipated industrial growth and other users as

1 elucidated further in the document.

2 I wanted to include this as an exhibit  
3 due to the fact that it prepares, it presents a  
4 comparative, and to me it checked the work that  
5 I had been using in my own work, and independent  
6 evaluations of the trends that I had seen. And  
7 I believe there was a question the other day,  
8 yesterday, about those projections being  
9 inaccurate. I would point out that at the time  
10 this projections were made Wichita was growing  
11 at a rate of 1 to 1.2% percent per annum, and in  
12 the last eight years, Wichita, I want it get  
13 this right, in the last eight years Wichita has  
14 experienced a total of 1.8%. So considerable  
15 flat lining. And it's borne out by this report.  
16 Which, further, if you would turn to figure  
17 3.10.

18 Q. What is that graphic depicting, Mr. Macey?

19 A. We have two different parameters presented here.  
20 The lower set of information is the average  
21 daily water use in million gallons per day. And  
22 the upper group of lines is associated with the  
23 peak, the daily peak, as represented  
24 historically and projected out over time.

25 Q. There is also a table 3-6 that represents

1 information in tabular form. Would you turn to  
2 that table?

3 A. Yes, sir.

4 Q. And what is the presentation in that table?

5 A. It goes in to the various detail in those  
6 projected years. This is essentially the source  
7 data of the graphic I just alluded to. And it  
8 goes in to the detail on the future growth  
9 anticipated in residential and commercial use,  
10 retail and wholesale, average and peak day. And  
11 those projections on the last column of, last  
12 two columns on the right are the, as I said, the  
13 data presented on this, on the projection  
14 graphic you alluded to do earlier.

15 I just simply wanted to quickly comment  
16 that, as you may have seen from that graphic I  
17 laid out, that the City's master plan document  
18 is really only looking out to about 25 years.  
19 So in the short-term we have very close data, we  
20 have very good data on how things are going to  
21 go. But when you are reaching out to 2060, as  
22 we are here, and as they have done previously,  
23 we have to consider that long term goal as well  
24 as our immediate need.

25 Q. Based on the data that's presented in this

1 document, do you believe that the demand used in  
2 the MODSIM DSS are appropriate?

3 A. That the demand utilized by me in the MODSIM  
4 DSS?

5 Q. Yes.

6 A. Yes.

7 MR. STUCKY: I will object. Just a  
8 moment ago what I heard from the testimony to be  
9 was Mr. Macey was not an expert on the MODSIM  
10 DSS model. I believe that was his testimony  
11 just a moment ago.

12 MR. McLEOD: I don't recall that.

13 A. I think he may be misinterpreting a statement  
14 that I was trying to make. I was alluding to a  
15 secondary model which has been the one utilized  
16 by Burns & McDonnell, which is the Equus Beds  
17 groundwater model. I am certainly not an expert  
18 in that and I would have said that. Nor am I,  
19 what I would consider an expert in MODSIM,  
20 however, my experience with multiple years of  
21 project development and interaction with the  
22 software, I consider myself a near expert, but  
23 certainly not an expert.

24 THE HEARING OFFICER: Does that resolve  
25 that for you?

1 MR. STUCKY: That's the testimony I  
2 heard. So, yes, same objection.

3 MR. McLEOD: I would say, even though  
4 the witness doesn't think of himself as an  
5 expert for purposes of the expert opinion rules,  
6 the familiarity he has described, the experience  
7 he has described with this model, in fact, make  
8 him an expert for evidentiary purposes. And I  
9 ask that he be accepted as such for purposes of  
10 testifying for the modeling work that he did and  
11 the demand of projection work that he did.

12 THE HEARING OFFICER: Could you repeat  
13 the question that you initially asked?

14 MR. McLEOD: I asked Mr. Macey whether  
15 he interprets the data shown in the document  
16 exhibit before us, as showing that the demands  
17 that he used in his MODSIM modeling were  
18 appropriate.

19 THE HEARING OFFICER: As showing what  
20 he used in the model is appropriate?

21 MR. McLEOD: Right. It's more of a  
22 question about his demand projection work than  
23 it is about the MODSIM model as well, at that  
24 point.

25 THE HEARING OFFICER: Does that help



1 resolve your objection at all?

2 MR. STUCKY: I am actually perhaps more  
3 confused now, as far as what the question is.

4 THE HEARING OFFICER: I took the  
5 question, and please correct me if I am wrong,  
6 but I took the question fundamentally to say did  
7 you, does the witness believe his work was  
8 appropriate.

9 MR. McLEOD: Fundamentally does the  
10 witness believe that the demand figures that he  
11 used in modeling were appropriate demand  
12 figures.

13 MR. STUCKY: The modeling he did was  
14 based made on MODSIM modeling, and that was the  
15 basis for the objection, that he has indicated  
16 he is not an expert in that regard.

17 MR. McLEOD: I don't think the  
18 objection is actually addressed to the question.

19 THE HEARING OFFICER: I am going to  
20 allow this because I think what it's asking for  
21 is, is does the witness believe that his work  
22 and application of the model was appropriate; is  
23 that right?

24 MR. McLEOD: Yes.

25 THE HEARING OFFICER: Not a greater

1 question about the validity of the model. So I  
2 am going to allow it.

3 BY MR. McLEOD:

4 Q. Mr. Macey, in your expert disclosure you had  
5 included a reference to the exhibit aquifer  
6 profiles. Do you know which one of the binders  
7 that's in?

8 A. Yes. Lime. Let me make sure. Fourth tab from  
9 the back. It's orange.

10 MR. McLEOD: Before I do anything with  
11 that I offer for admission City's Exhibit 22,  
12 which I don't think we have admitted yet.

13 MR. STUCKY: No objection.

14 THE HEARING OFFICER: Okay. City 22  
15 will be admitted. Where are we now?

16 MR. McLEOD: Lime binder.

17 (City Exhibit 23 was marked for  
18 identification by the Reporter.)

19 BY MR. McLEOD:

20 Q. Mr. Macey, what's this document that has been  
21 marked as city 23?

22 A. This is a series of maps and cross-sectional  
23 displays of the aquifer levels and the, at the  
24 identified corridors, if you go to the first  
25 page of the exhibits, the first page is just a

1 general overhead map of the Equus Beds well  
2 field area and this is a simple GIS  
3 representation of data to show where we are in  
4 the world. The various lines, blue, red, green  
5 and dash represent cross sections of that  
6 aquifer, of that area of the aquifer area, I am  
7 sorry, that area of the aquifer.

8 So if I were to examine cross section  
9 A, that's actually the next page. And what this  
10 represents is as you go from with west to east,  
11 across the well field area you have five known  
12 locations where the lithology is identified, and  
13 the aquifer levels, at various points in time,  
14 are represented.

15 This was work that was generated by  
16 Burns & McDonnell in approximately the year 2000  
17 and I found it to be a useful graphic.

18 Q. Did you have any role in the actual preparation  
19 of the work?

20 A. This work, yes, I have submitted. The dashed  
21 line on that profile, and all the subsequent  
22 ones, represent the outcome of the proposed  
23 aquifer minimum levels, as delineated by Burns &  
24 McDonnell. So Burns & McDonnell's index level  
25 datum were represented at their point in space

1 on this profile.

2 So to reiterate then, these profiles,  
3 AA, BB, CC, throughout put that reference, we  
4 have the aquifer levels at 1940, 1993, 1998 and  
5 the additional line which is dashed, which is my  
6 work, is the interpolative elevation between the  
7 proposed index levels.

8 Q. In the course of that work did you consult with  
9 Burns & McDonnell to have them peer review or  
10 review your work?

11 A. I have submitted this for review.

12 MR. McLEOD: I offer City 23 for  
13 admission.

14 THE HEARING OFFICER: Any objections?

15 MR. STUCKY: May we have just one  
16 moment? Off the record.

17 (A short off-the-record discussion  
18 was held at this time.)

19 MR. STUCKY: Back on the record. I  
20 would allow it to be admitted but only for the  
21 purpose of allowing Mr. Macey to testify to the  
22 one line that he helped add to this document.  
23 And any further use or admission of it would  
24 have to be subject to further foundation made at  
25 a later time.

1 MR. McLEOD: We'll admit it, if there  
2 are no other objections, subject to those  
3 limitations.

4 THE HEARING OFFICER: Okay. So subject  
5 to the one limitation Mr. Stucky described City  
6 23 is admitted.

7 BY MR. McLEOD:

8 Q. Mr. Macey, I think earlier in the hearing there  
9 was an exhibit, a graphic exhibit that had been  
10 modified from a Kansas Geological Survey graphic  
11 and I am thinking that was City Exhibit 8. And  
12 that's in the lime binder, Mr. Macey.

13 A. I have it, sir.

14 Q. And foundational questions came up because of  
15 the witness who was on the stand that was first  
16 discussed didn't really know the particulars of  
17 where that graphic came from. What can you tell  
18 us about that, where the graphic came from and  
19 who provided it?

20 A. Mike Jacobs, with the City, provided this. It  
21 was in our records. The original file that was  
22 transmitted to him by the U.S. Geological  
23 Survey.

24 MR. STUCKY: May I approach the  
25 witness, we are still trying to find the

1 document.

2 A. It's the orange tab in the lime binder. It is  
3 in front of the green tab. Third one in the  
4 back. This one (indicating).

5 MR. STUCKY: I was looking up on the  
6 screen and that confused me. I was looking on  
7 the screen and that confused us. Okay. We are  
8 clear.

9 A. We are still speaking of this graph  
10 (indicating).

11 MR. STUCKY: On the record we are  
12 referring to Exhibit 8; is that correct?

13 THE HEARING OFFICER: Yes.

14 A. The original Excel file was transmitted to Mike  
15 Jacobs in an E-mail from U.S. Geological Survey  
16 Mike subsequently added our water use data to  
17 the last part of that file to represent the far  
18 right of the lines in the columns, the far right  
19 of the lines presented there. I think he also  
20 added the column data from data that was already  
21 in the worksheet. Again, this was a U.S.  
22 Geological Survey worksheet that was shared with  
23 us. And it would represent our in-house  
24 abilities to represent the data.

25 Q. So to make sure we are clear for the record, the

1 data that was actually added to that by city  
2 staff was what, what part of the data showing  
3 the graph?

4 A. The data for the City's water usage, for  
5 groundwater municipal use inside the city, I am  
6 sorry, the central city, Wichita well field  
7 area, and total groundwater use inside that same  
8 area.

9 Q. For what period?

10 A. I believe it would have probably have been just  
11 the columns for the data for 2014 and 2015.

12 Q. And if we were to compare this with the graphic  
13 in the publication that's referenced below the  
14 graph, were there more lines and legends on the  
15 graph that the Kansas Geological Survey  
16 published?

17 A. Yes.

18 Q. And did they remove those lines in the virginal  
19 sense of the City or did someone on the city  
20 staff remove those lines?

21 A. I can't speak to that.

22 Q. What were the lines and legends that were pulled  
23 off?

24 A. They were additional representations for water  
25 use by non municipal users, by irrigators, those

1 are identified as separate lines on the same  
2 graphic and also from the same data inside the  
3 worksheet.

4 Q. And other than the far right where Mike Jacobs  
5 added some information to update, are the two  
6 black lines shown on that graph identical with  
7 the ones that were in the published version?

8 MR. STUCKY: I am sorry, are we talking  
9 about two solid black lines? Or are we talking  
10 about --

11 MR. McLEOD: The dotted and the solid  
12 black lines.

13 BY MR. McLEOD:

14 Q. Were those both in the published graphic?

15 A. Prior to the data added for 2014 and 2015, yes.

16 Q. So all but perhaps those last two bars would  
17 have been in the original graphic?

18 A. Yes.

19 Q. And the main changes to pull out the red lines  
20 that showed usage that was in the study area,  
21 but outside the central well field; is that  
22 correct?

23 A. Yes. And this file is still available to me, if  
24 necessary.

25 MR. McLEOD: With that additional



1 information I hope that cleared up where that  
2 information is and where the various source came  
3 from.

4 BY MR. McLEOD:

5 Q. To be sure we are clear for the record, I think  
6 there may have been some confusion up to this  
7 point, what were you doing with the MODSIM DSS  
8 model versus what Burns & McDonnell was doing  
9 with the MODFLOW groundwater model?

10 A. I was working with the MODSIM model the various  
11 resources that were available to us during that  
12 represented 1% drought. Balancing the Cheney  
13 and the Equus and the other resources.  
14 Utilizing those at different, at different  
15 proportions, utilizing them at different stages  
16 of Cheney, at different demands at different  
17 starting elevations of Cheney at different  
18 starting elevations of the aquifer. I counted  
19 over 150 iterations of that modeling effort. In  
20 addition to the exercise of trying to identify  
21 which portions of \$421 million project should be  
22 constructed for our most benefit from the ASR.  
23 In that effort I identified additional projects  
24 that could be considered, implemented those in  
25 the model, ran the model in the different

1 scenarios. But for the purpose of this proposal  
2 it was strictly limited to the 2060 projection  
3 of the City demand with the implemented drought  
4 responses and limiting the ASR credits to  
5 quantity identified, so we could identify what  
6 amounts were used and when.

7 Q. So basically your modeling is showing the  
8 interrelationship and the interaction of the  
9 city resources, including those credits, with  
10 the assumed environmental conditions that are  
11 being developed; and in contrast to that, what  
12 was Burns & McDonnell doing in their modeling  
13 generally?

14 A. The modeling undertaken by Burns & McDonnell  
15 utilizing the portion of the water resources  
16 that were taken from the aquifer. It was done  
17 in the MODFLOW model, which is the USGS model,  
18 that I am not expert in.

19 Q. And, for example, so to help relate this maybe a  
20 little better, the tabular material that's  
21 showing the allocation of resources between  
22 Cheney and the Equus Beds, are those numbers  
23 being drawn from your work?

24 A. Yes.

25 MR. McLEOD: I don't have further

1 questions for the witness.

2 THE HEARING OFFICER: Mr. Oleen.

3 MR. OLEEN: Yes, I have some questions.

4

5 CROSS EXAMINATION

6 BY MR. OLEEN:

7 Q. Mr. Macey, if I understand your testimony  
8 correctly, well, tell me if I understand your  
9 testimony correctly, you had involvement in  
10 creating in the proposal, which is City's  
11 Exhibit 1, in the black binder, you had  
12 involvement in creating the model simulation  
13 results that are depicted in table 2-3; is that  
14 correct?

15 A. Correct.

16 Q. What about the data that's depicted in table 2-5  
17 of this same proposal? Do you also have  
18 involvement in creating that table?

19 A. No.

20 Q. Okay.

21 A. Other than the source data for this, it would  
22 have been from my original work.

23 Q. Well, looking at table 2-5, do you recall during  
24 Mr. Pajor's testimony when we are looking at the  
25 row that says City of Wichita ASR credit

1 pumping, (AF)?

2 A. Yes.

3 Q. And the column five in that row?

4 A. Yes.

5 Q. That figure there that I believe Mr. Pajor  
6 suspected might be a typo, do you have an  
7 opinion on that number or not?

8 A. Well, in drought year five, from my original  
9 work, the demand was 56,579. And for Equus Beds  
10 well field in the ASR in acre feet. And the  
11 issue of concern was that the -- that that --  
12 that was -- can you reiterate where the error  
13 was?

14 Q. Sure, I just want to make sure that I  
15 understand, and that DWR understands, how to  
16 read the two rows that are right next to each  
17 other. One row, which is titled, Equus Beds WF  
18 & ASR (AF) and below that, City of Wichita ASR  
19 Credit Pumping (AF).

20 A. I am sorry, there is some detail here that isn't  
21 presented in that particular year, and others,  
22 there were waters taken from the Bentley reserve  
23 well field that are enumerated in that 56,579.  
24 And I think another, another person will be  
25 giving testimony to elaborate on that, but that

1           56,579 contains resources from the Bentley well  
2           field, in addition to the 40,000 feet from the  
3           ASR.

4       Q.    Right.  And it is my understanding in the row  
5           titled total EBWF, et cetera, that that's a  
6           combination of both the 40,000 annual, quote,  
7           native water rights, plus to the extent there is  
8           any excess over 40,000, that excess is recharge  
9           credits?

10     A.    I think that was, that would, that could be  
11           reasonably interpreted from that indicator  
12           there, but I believe that it also does contain  
13           those rights that I just described on the  
14           Bentley well field.

15     Q.    Well, I will ask it one more time and then I  
16           will maybe drop it.

17                        I just thought that any time in the row  
18           where it says total EBWF, if the number is in  
19           excess of 40,000 then the remainder after  
20           subtracting 40,000 is the number of anticipated  
21           recharge credits that would be used?

22     A.    I think that's a reasonable assumption.

23     Q.    If that assumption is reasonable, then I wanted  
24           to know if my math was incorrect, or if it was a  
25           typo, because when you subtract 40,000 from the

1 figure 56,579 you do not get 15,552.

2 A. It's obviously a typo.

3 Q. Okay. Thank you. Both table 2-3, well, let me  
4 back up. At the top of Page 2-5 of the  
5 proposal, do you see where there is a bullet  
6 point that says Updated Outcome-Based Goals?

7 THE HEARING OFFICER: I am sorry, where  
8 are you?

9 MR. OLEEN: Page 2-5 of the proposal.

10 BY MR. OLEEN:

11 Q. At the top there is a bullet point that says  
12 Updated Outcome-Based Goals?

13 A. Page 2-5?

14 Q. Section 2.3.

15 A. Yes.

16 Q. Do you see that bullet point?

17 A. Yes.

18 Q. Last bullet, utilize 40,000 AF per year from  
19 EBWF prior to use of ASR recharge credits. Do  
20 you see that?

21 A. Yes, sir.

22 Q. Isn't it true that other city officials have  
23 said that under this proposal they would always  
24 be utilizing the 40,000 acre feet of native  
25 water rights before withdrawing any recharge

1 credits in any year of a drought; is that  
2 correct?

3 A. That would be the direction it would take, yes.

4 Q. And I just wanted to confirm that that  
5 statement, I can assume, is reflected in table  
6 2-3 and 2-5?

7 A. That was the intent.

8 Q. Thank you. Now, I want to turn to figures 10  
9 and 11 of the proposal. They are maps of the  
10 entire well field; is that correct?

11 A. Identifying the cells, yes.

12 Q. I just want to make sure that I understand what  
13 figure 10 is showing compared to figure 11. Can  
14 you explain the differences in those two figures  
15 for me, please.

16 A. Well, I know that other persons will make  
17 testimony on these; but I can. I did not  
18 participate in their creation, but I can  
19 identify what it is. The first of the figures  
20 is the figure 10 is the end of the drought  
21 simulated condition as identified at the end of  
22 stress period 8. The elevation information was  
23 translated in to the resultant estimated aquifer  
24 saturated thickness and a percentage. And the  
25 second one is --

1 Q. And if I may interrupt you, thank you. If I  
2 understand figure 10 correctly, that does not  
3 necessarily reflect that each index cell level  
4 at the end of the eight year period, the actual  
5 water level as dropped down to the proposed new  
6 levels that the City is asking for as part of  
7 this proposal?

8 A. Correct.

9 Q. But now turning to figure 11, I am thinking  
10 that's what figure 11 might actually show. And  
11 that's what I would like you to confirm for me.

12 A. That is my understanding, yes.

13 MR. STUCKY: I will object to this line  
14 of questioning. I promise I am trying to allow  
15 latitude in this regard, but my objection is  
16 twofold. Number one, it's outside of the scope  
17 of his expert report. And if you review his  
18 expert report, as far as what he is expert on,  
19 this isn't included within the sections that he  
20 has indicated he is an expert on, number one.

21 And number two, these charts are based  
22 on MODSIM modeling that was performed by others  
23 with Burns & McDonnell and were not performed by  
24 this witness. So I think at best that those  
25 questions be left to the individuals who



1 actually performed this work.

2 MR. OLEEN: If there is another city  
3 witness that's going to be able to testify to  
4 this, I will be happy to repeat every one of my  
5 questions for Mr. Stucky's benefit with a  
6 different witness.

7 THE HEARING OFFICER: Mr. McLeod, will  
8 there be another witness to testify about the  
9 creation?

10 MR. McLEOD: There would be another  
11 witness who can, but I would like to point out  
12 DWR is in cross examination here, and DWR did  
13 not serve any witness disclosure for this  
14 witness. DWR, in the scope of cross, is not  
15 bound by what was disclosed or not disclosed by  
16 the City's expert disclosure for the witness.  
17 The scope allowed in cross examination is  
18 exceptionally broad, and the objection is  
19 inappropriate when addressed to this questions  
20 raised in cross examination.

21 THE HEARING OFFICER: I seem to find it  
22 reasonable someone testifying as to what these  
23 figures mean, and were intended to mean, be  
24 someone that's familiar with their creation. So  
25 I don't think that request is unreasonable. If

1           this information, or these figures, were used by  
2           this witness and in the course of his work, that  
3           would be different.

4                     Mr. Macey, did you use these figures in  
5           the course of your work?

6     A.    No.

7                     THE HEARING OFFICER:   Okay.  I think in  
8           this particular instance I have given a lot of  
9           latitude, and I intend to do so, but I think in  
10          terms of interpreting what these particular  
11          figures mean is best left to a more qualified  
12          witness.  So I will sustain the objection.

13                    MR. OLEEN:  No further questions.  
14          Thank you.

15                    THE HEARING OFFICER:  Mr. Stucky.

16                    MR. STUCKY:  Would the audience like a  
17          lunch break before I start my questioning?

18                    THE HEARING OFFICER:  That's probably a  
19          very reasonable suggestion.  It is almost 12:40  
20          let's take a break until 1:45.

21                    (REPORTER'S NOTE:  At this time,  
22          12:37 p.m., a lunch recess was taken, after  
23          which, 1:44 p.m., the following proceedings were  
24          held:)

25                    THE HEARING OFFICER:  Back on the

1 record. It's 1:45 and, Mr. Stucky, I believe  
2 that you were up.

3

4 CROSS EXAMINATION

5 BY MR. STUCKY:

6 Q. Mr. Macey, just for clarification, do you have  
7 any education or training in computer  
8 programming?

9 A. Yes.

10 Q. What is that training?

11 A. University courses in programmable languages.

12 Q. Did you have a degree in computer programming?

13 A. No.

14 Q. Do you have a degree in hydro geology?

15 A. No.

16 Q. Do you have a degree in hydrology?

17 A. No.

18 Q. A few moments ago you indicated that you helped  
19 to make some predictions for future growth of  
20 the City of Wichita. Do you recall that line of  
21 questioning?

22 A. I did not make those predictions, those were  
23 others' predictions that I utilized in the  
24 model.

25 Q. So if I were to ask you questions about how

1           those predictions were made you wouldn't be able  
2           to answer those predictions?

3       A.    I could read those documents as well as you can,  
4           that's about it.

5       Q.    So the answer is?

6       A.    I can't elucidate on their development.

7       Q.    And as far as answering questions about past  
8           projections with regard to the City of Wichita  
9           on its growth?  Could you answer those  
10          questions?

11      A.    No.

12      Q.    You spoke to, well, there was a graph that was  
13           put out on the board that showed different  
14           levels of growth within the City.  There was low  
15           growth, medium growth and high growth within the  
16           city.

17      A.    Yes.

18      Q.    Can you tell me, if you know, or have an opinion  
19           on this, how one quantifies what is considered  
20           low growth, what's considered medium growth and  
21           what's considered high growth.  How is that  
22           quantified?

23      A.    In that document that was delineated.

24      Q.    Do you have any knowledge or expertise on making  
25           those predictions or projections?

1 A. No.

2 Q. Do you have any testimony, sitting here today,  
3 whether or not medium growth was the suitable  
4 projection to use?

5 A. The recommendation from the report was that that  
6 was the most likely. And the, I believe,  
7 counsel's guidance in the strategic plan  
8 informed me, and the process moved forward to  
9 utilize that medium growth projection.

10 Q. As far as why a medium growth determinant was  
11 used, you don't have an opinion as far as why  
12 that was used; is that correct, other than what  
13 you were told by others?

14 A. Other than it being recommended as the most  
15 likely outcome.

16 Q. You didn't perform any personal analysis to try  
17 to determine if that was a suitable growth  
18 model; is that correct?

19 A. For purposes of my work I found it to be  
20 suitable.

21 Q. As far as the basis for how that medium growth  
22 projection was calculated, you didn't do any of  
23 that work?

24 A. No.

25 Q. You indicated that as you were working on the

1 MODSIM model to try to determine projections in  
2 needs of water that you made some changes, I  
3 believe you said to some of the inputs, is that  
4 what you said?

5 A. As necessary for the assumptions for the  
6 demands, and as well as for the changes in the  
7 programming I described for the water plumes, et  
8 cetera.

9 Q. So the changes, specifically that you made to  
10 the programming were to allow for changes within  
11 the water demand of Cheney and changes within  
12 the water demand as far as what's taken from the  
13 Equus Beds? Is that the changes that you made?

14 A. Actually I could better characterize. The  
15 process that was built by Mr. Winchester was an  
16 iterative import/export from the model to Excel,  
17 back and forth. I automated that process so  
18 that those, those parameter changes, those blend  
19 changes were made as a part of the programming,  
20 as opposed to hands-on error prone manipulative  
21 process. And so those substantial changes were  
22 made to be automatic.

23 Q. How did you know when you made those modeling  
24 changes you did it correctly?

25 A. Those model parameter changes were with Mr.

1 Winchester and he tested them.

2 Q. I think you indicated that your training by Mr.  
3 Winchester was over the phone and also by virtue  
4 of an E-mail. Is that what your testimony was?

5 A. That's correct.

6 Q. Can you tell me what constituted the phone  
7 training?

8 A. I would describe to him the task that I was  
9 trying to achieve and how I would go about it  
10 and he would provide guidance.

11 Q. I guess my question is, was there more than one  
12 call?

13 A. Oh, yes.

14 Q. Do you know how many?

15 A. No.

16 Q. Just to clarify, as far as whether or not MODSIM  
17 itself is a suitable model for the projections  
18 made by the City, you are not an expert on that  
19 subject; is that correct?

20 A. No. But Mr. Winchester made the recommendation  
21 that it was the preferred of several, and I  
22 believe that is in his resource documents I  
23 shared as exhibits.

24 Q. Although you were able to put some inputs in to  
25 MODSIM, you also, I think you testified you also

1 would not characterize yourself as an expert as  
2 far as the ins and outs of how MODSIM works, is  
3 that a true statement as well?

4 A. I did not program it beyond the allowances made  
5 by the developers. The program, the basic  
6 program itself, is a stand alone and the changes  
7 made are a side, or subroutine, that as he  
8 described in his testimony interacts with the  
9 aquifer levels and provides flows to streams and  
10 streams come back to the aquifer, many of those  
11 calculations are happening outside of the model  
12 proper. As effectively subroutines and math  
13 that is augmented. And to the extent that I  
14 understand that part of programming, I would say  
15 that I am knowledgeable about that, but I am by  
16 no means an expert on it.

17 Q. Let's flip to Exhibit 22, which was the water  
18 master plan.

19 A. Can you remind me where that is?

20 Q. The individual to my right that has two working  
21 arms is trying to find it.

22 MR. STUCKY: Mr. McLeod, do you recall?

23 MR. McLEOD: I believe it is in the  
24 white binder.

25 A. Yes, sir.



1 Q. Am I correct in understanding with respect to  
2 this water master plan you didn't actually  
3 perform any of the analysis yourself that's  
4 included in this water master plan?

5 A. I provided feedback to the developer.

6 Q. But as far as helping to write this master plan  
7 itself, did you help write it?

8 A. No. I provided feedback to the developer.

9 Q. There are a number of calculations that are  
10 included in this water master plan, did you  
11 personally make any of those calculations?

12 A. No, sir.

13 Q. A moment ago you spoke as to some of the  
14 conclusions in that water master plan, did you  
15 help to write those conclusions?

16 A. No. But I understand the reason that I was  
17 speaking to those conclusions is, I guess for  
18 context as a comparative against the resource  
19 that I was utilizing, that's the only reason I  
20 was providing that commentary.

21 Q. You testified to figure 3.10 in this water  
22 master plan, and within that figure there is  
23 some different growth projections for the city.  
24 There is a green line that shows low growth,  
25 there is a yellow line that depicts medium

1 growth and there is a purple line that depicts  
2 high growth in that chart; is that correct?

3 A. Yes, sir.

4 Q. And as far as an analysis to determine whether  
5 or not the City's best fit, which one of those  
6 growth patterns you didn't do those  
7 determinations, correct?

8 A. Actually those were presented as comparative  
9 against the originator's work, I don't know  
10 anything beyond that.

11 Q. So you are not certain of how those growth  
12 projections were determined; is that correct?

13 A. Other than understanding it from this book  
14 (indicating).

15 Q. Now, I want you to flip to him 3.6.6 of this  
16 document, which is the conclusion of the  
17 document. It's on Page 3-8 --

18 A. Yes.

19 Q. -- of that document.

20 A. Yes, sir.

21 Q. Can you read for me the first sentence of the  
22 second full paragraph on that page.

23 A. The City also developed an average water demand  
24 projection as part of the 2015 Water Resources  
25 Plan and includes a 1% drought and targets of

1 .35% conservation effort through year 2060.

2 Q. That says it's the City's goal to basically  
3 implement a drought target of a third of a  
4 percent, or a conservation target of a third of  
5 a percent; is that correct?

6 A. I think that that should be elucidated that  
7 should be an annual goal. The intent is to say  
8 annually, not .35 over the course of the years  
9 2060, that should be expressed as an annual  
10 goal.

11 Q. So with respect to it being an annual goal, the  
12 City's goal was only to promote conservation  
13 annually by about a third of a percent, is that  
14 what this document purports to show?

15 A. Yes, and I can elucidate on the total count on  
16 that, if you want.

17 Q. You indicated a moment ago that population  
18 growth in the City is perhaps going to flat line  
19 at some point in the future?

20 A. Actually I said it has flat lined.

21 Q. I misspoke. Yes, you said the last eight years  
22 1% growth and now essentially flat lined?

23 A. That's what I would consider that it has flat  
24 lined as per previous indicators.

25 Q. Do you have any reason to believe that that

1 growth projection would change?

2 A. I would anticipate and engineer a project to  
3 include that it will change to a greater number.

4 Q. Now, how long, and this may have been stated,  
5 how long have you worked for the City?

6 A. Since 2014.

7 Q. And where did you work prior to 2014?

8 A. I had 20 years of experience as a municipal  
9 engineer in Lewiston, Idaho.

10 Q. In Idaho. So prior to 2014 did you work on any  
11 projects involving the Equus Beds aquifer?

12 A. No, sir.

13 Q. Prior to 2014, did you have any involvement in  
14 the ASR Phase II project?

15 A. No.

16 Q. Prior to 2014 did you have, had you not done any  
17 work on behalf of the City of Wichita or any  
18 work involving any aquifer in the State of  
19 Kansas?

20 A. That would be entertaining if I had; but, no, I  
21 haven't.

22 Q. I would ask if you would flip to me to Exhibit  
23 23. Exhibit 23 was that map.

24 A. My map? The one I made?

25 THE HEARING OFFICER: This one

1 (indicating)?

2 Q. A moment ago as Mr. McLeod walked you through  
3 this document, you indicated that there was a  
4 line on this document that you helped to create,  
5 was that a true statement?

6 A. I created the GIS representation previously  
7 created by Burns & McDonnell that was in the  
8 form of this sheet right here, electronically  
9 it's the content that I created.

10 Q. To clarify, as far as it is depicted on this  
11 Exhibit 23, did you do the work prior to that  
12 Exhibit 23 being created?

13 A. No.

14 Q. So, in other words, and I am strictly looking at  
15 the date of this document, which is on the  
16 second page, and if you will, with me, if you  
17 would look, on the left-hand portion of that  
18 second page, there is a date.

19 A. Yes, 2000.

20 Q. You would agree that the date of that document  
21 is 2000?

22 A. Uh-huh.

23 Q. So just to clarify the record, so I am clear,  
24 there was some testimony perhaps about whether  
25 or not you helped to create a line on this

1 document. In other words, you didn't actually  
2 help to create the line, and any of the analysis  
3 that was depicted on this particular document;  
4 is that correct?

5 A. I would differ with that opinion. If you will  
6 look at a comparable graphic from the section  
7 previous in the exhibit book ASR concept,  
8 Exhibit 7, the second page of the various maps  
9 that are in the back, that is the original Burns  
10 & McDonnell document. And the comparable one  
11 that you demonstrated shows the additional line  
12 added to the original document (indicating).

13 Q. So at a later time you added a line then to the  
14 original document?

15 A. That's correct.

16 Q. Is that your testimony?

17 A. That is correct.

18 Q. Okay. I was unclear. Do you know if there were  
19 other modifications made to that document other  
20 than that line?

21 A. These are edits that I made, I don't know what  
22 anyone else did.

23 Q. Did anyone peer review the work you did?

24 A. As it was provided to Burns & McDonnell.

25 Q. As I heard the testimony to be was that you

1 submitted this for review --

2 A. Yes.

3 Q. -- to Burns & McDonnell, I think was your exact  
4 language; is that correct?

5 A. That may be, yes.

6 Q. And you indicated it was submitted for review,  
7 but what I didn't hear was the result from it  
8 being reviewed from Burns & McDonnell. Did you  
9 hear anything back from them?

10 A. Not that I recall. I indicated it was a  
11 resource that I felt was useful for  
12 demonstrating the levels that are existing  
13 historically and proposed, and I made it  
14 available to them as a resource, should they  
15 want to. And I similarly want to, so that's why  
16 I submitted it.

17 Q. So you would at least agree with me, and again,  
18 the full process matters, you would at least  
19 agree with me that the actual peer review  
20 process was not completed in that regard; is  
21 that correct?

22 A. If you would consider the return response to be  
23 the complete peer review, I would agree.

24 Q. If you could flip with me to the City's Exhibit  
25 8.

1 A. (Witness reviews documents). I don't know what  
2 that is.

3 Q. It is --

4 A. Water use I believe is what it is called.

5 THE HEARING OFFICER: This one  
6 (indicating)?

7 Q. With respect to Exhibit 8 there are two lines  
8 depicted on that document; is that correct?

9 A. Yes, sir.

10 Q. And tell me what that top line is.

11 A. I am assuming the dash line total groundwater  
12 use inside the central Wichita well field area.

13 Q. And what is the line below it?

14 A. Groundwater municipal use inside the central  
15 Wichita well field area.

16 Q. So the top line represents total water use  
17 within the Equus Beds well field; is that  
18 correct?

19 A. Yes.

20 Q. And the second line just depicts water use by  
21 the City; is that right?

22 A. That -- I think that could be assumed, yes.

23 Q. Would you acknowledge the fact that, first of  
24 all, that the City is using the bulk of the  
25 water within the Equus Beds well field?



1 A. I think that's a misstatement. It's the central  
2 well field study area, which would be our well  
3 field boundary. As a whole I would say that's  
4 not correct.

5 Q. Within what's depicted in that particular  
6 graphic?

7 A. This graphic defined to the central well field  
8 area, yes, it's over 50 percent historically.

9 Q. Does that map also show, at least to a rough  
10 degree --

11 MR. STUCKY: May I approach the  
12 witness?

13 THE HEARING OFFICER: Yes.

14 BY MR. STUCKY:

15 Q. Now, I am not asking for an exact science, but  
16 would you agree that at least roughly the two  
17 lines depicted in Exhibit 8 parallel each other  
18 at least to some degree?

19 A. Yes, since it is the Wichita well field area,  
20 and it is a portion of groundwater used, where  
21 we have the majority of the water rights, and it  
22 would make sense then that the majority of the  
23 use would be our use.

24 Q. So the users of everybody within this area  
25 depicted on the graph roughly parallels the use

1 of the City of Wichita, is that what you would  
2 say?

3 A. Uh-huh. That would only indicate that the long  
4 term non municipal use is fairly stable.

5 Q. You said that you used MODSIM to see differences  
6 in Cheney Reservoir and the Equus Beds aquifer,  
7 and in doing so you utilized 150 different  
8 iterations, was that your testimony?

9 A. Probably more than that, but yes. But actually,  
10 I don't understand your question, to see water  
11 levels.

12 Q. Tell me what you used the iterations for.

13 A. Multiple uses. Multiple starting conditions of  
14 the two main water resources, to test the  
15 sensitivity of the model to those conditions.  
16 And then iteratively with eight or so different  
17 components of an expanded ASR project, one, two,  
18 three, all the way to eight of those, assembled  
19 as a group, to arrive at the best most operable  
20 combination outcomes for the ASR creation, ASR  
21 credit creation in the drought -- I am sorry,  
22 not in the drought -- but the outcomes of  
23 through the drought using those different  
24 components. And that's the different  
25 iterations. I guess the point being, that I

1           have run it more than once or twice.

2       Q.    So the multiple uses, for example, what are  
3           those multiple uses?

4       A.    That is enabling different links in the diagram.  
5            You could see the links, the connecting lines  
6            between components, those are either disabled or  
7            enabled based on whether a component is in use.  
8            Different flow capacities of different  
9            components are changed, but those are again just  
10           iterations of me playing with the model.

11      Q.    And what were all the different components?

12      A.    Of the various components of additional ASR  
13            implementation there were, the diversion wells  
14            were in there, the proposed diversion wells were  
15            in there, the additional recharge recovery wells  
16            were in there as an alternative, an additional  
17            expansion of the ASR point proper to a 60 MG  
18            capacity, additional, what we call side stream  
19            storage, which would allow the flow events of  
20            the river to be captured and extended for the  
21            use in the ASR project. I probably missed a  
22            few. But those enumerate the different  
23            components that were considered.

24      Q.    Now, as you went through and were playing with  
25            the different components and trying to change

1 the components to create different results, were  
2 there components of the model that you  
3 determined should have been included in the  
4 model? Or would have been best, that you wished  
5 were included in the model? Let me ask it that  
6 way.

7 A. I don't think I understand your question.

8 Q. I guess my question is, you said there were  
9 different components of this model that could be  
10 changed. Were there categories that as, you  
11 looked at those different components, there were  
12 additional categories you wished would have been  
13 part of the model that you could have changed?

14 A. There were innumerable amounts of components  
15 that I would have added, but I didn't have time  
16 nor the inclination.

17 Q. Well, if you had all the time in the world on  
18 your hands, what would be some of those  
19 additional components you would have added to  
20 the model if you could or change?

21 A. That's strictly preliminary work, nothing I  
22 would disclose at this point.

23 Q. Well, I am asking you in a hearing, as far as,  
24 in a hearing under oath, what these additional  
25 changes would have been. I think that's

1 something you could testify to.

2 A. Well, I mean, there were allowances for a  
3 certain number of diversion wells that could be  
4 considered under the proposal. I would have  
5 considered an expansion of that array of wells.  
6 There was an expansion of the, what was  
7 described as the local well field, local well  
8 field downtown. There were the additional  
9 proposed considerable consideration of wells  
10 along the floodway that were not modeled that I  
11 think we would capitalize on. Again, it's all  
12 ideas.

13 Q. You indicated that as you were running the  
14 different iterations you were trying to create  
15 an optimal situation or an optimal result, was  
16 that your term?

17 A. Yes.

18 Q. Tell me what you meant by optimal? In other  
19 words, optimal for who?

20 A. I would consider that achieving the goal of  
21 having the water resources to stay out of stage  
22 3 drought, and minimizing the use of  
23 groundwater, to be my optimal goal. And to that  
24 end, as I described and maximized the usage of  
25 Cheney as the model that would allow me, without

1           depleting it to the extent that it would no  
2           longer be useful. Again, to minimize the use of  
3           the groundwater, and that would mean in the form  
4           of ASR credits for those usages beyond 40,000  
5           acre feet.

6       Q. All right. I ask that you flip to Exhibit 1,  
7           which is the City's proposal, it is in the black  
8           notebook. A moment ago you testified with  
9           respect to section 2.3, which happens to be on  
10          Page 2-3 of the City's proposal.

11       A. Uh-huh.

12       Q. And I just want to be clear that your testimony,  
13           at least as it relates to the 110%, which is  
14           identified on this page, your testimony was that  
15           that was just an error; is that correct?

16       A. I am not certain why that value is there, that's  
17           correct. As I demonstrated, I mentioned the  
18           graph on the next page shows the initial  
19           condition as 167,000 acre feet which is hundred  
20           percent full.

21       Q. And also table 2-3 it starts, Cheney Reservoir  
22           at 110% at the start of that modeling as well.  
23           Is that at least what the table shows?

24       A. Yes, the table indicates an error, to me an  
25           error.

1 Q. Now, if I were to tell you that throughout this  
2 proposal that number of 110% surfaces for the  
3 starting point for Cheney Reservoir. Is it your  
4 testimony that that 110% throughout this entire  
5 proposal is an error?

6 A. It seems that's true.

7 Q. I think you told, you said that as a model is  
8 being looked at there is always points of  
9 clarification, I think was your terminology; is  
10 that right?

11 A. I may have said that.

12 Q. And I think you also said that it is expected to  
13 see refinery, is that your language as well?

14 A. Yes, I think so.

15 Q. Do you know whether or not anyone from the  
16 District, or anyone from the Division of Water  
17 Resources, asked the City how that 110% for  
18 Cheney Reservoir was determined in advance of  
19 this hearing?

20 A. Yes, I do.

21 Q. And how did the City respond to that  
22 questioning?

23 A. I don't recall that response, but I know that a  
24 response was made.

25 Q. I ask that we flip, you flip in your, in City's

1 notebook in the black notebook to the Proposal  
2 Correspondence. And to start out, well, if you  
3 could flip to Page 69.

4 A. (Witness complies). Yes, sir.

5 Q. On Page 69, does that appear to be a letter that  
6 was written by David Barfield, who would be the  
7 chief engineer of the Division of Water  
8 Resources to the City of Wichita?

9 A. Uh-huh, yes.

10 Q. And do you have any reason to doubt that this  
11 was the official letter, or at least a  
12 representation of the official letter, that was  
13 sent to the City of Wichita?

14 A. No, I don't.

15 MR. STUCKY: I would like to mark this  
16 as the City's Exhibit, I think we are ready for  
17 24.

18 (City Exhibit 24 was marked for  
19 identification by the Reporter.)

20 THE HEARING OFFICER: Any objections?

21 MR. McLEOD: No objection.

22 THE HEARING OFFICER: City's 24 will be  
23 admitted.

24 MR. STUCKY: I would ask to move to  
25 admit this in to evidence.



1 THE HEARING OFFICER: We did.

2 MR. STUCKY: Sorry, it's been a long  
3 day.

4 BY MR. STUCKY:

5 Q. I will do it from memory, I gave my copy away.  
6 If you could turn to Page 71 of that letter.

7 A. Yes, sir.

8 Q. And at the top of Page 71 there is a question  
9 that is asked by the chief engineer to the City  
10 of Wichita; is that correct?

11 A. It's a bullet point, it's not really phrased in  
12 the form of a question.

13 Q. Could you read for me that bullet point from the  
14 chief engineer of the Division of Water  
15 Resources?

16 A. We assume that the 110% assumption for Cheney is  
17 based on the reservoir achieving this level in  
18 non drought years. If so, you might state this  
19 basis.

20 Q. At least as it relates to this letter the chief  
21 engineer of the Division of Water Resources  
22 asked how this 110% was determined; is that  
23 correct?

24 A. That appears to be, yes.

25 Q. And the date of this letter, if you flip to Page

1           69, the very first page of that letter, what is  
2           the date of this letter?

3           A.    September 18th, 2017.

4           Q.    So if the City was asked how this 110% was  
5           determined clear back in 2017, do you have any  
6           response or rationale for why that percentage  
7           wasn't corrected in the proposal?

8           A.    I can't explain why it wasn't corrected.

9           Q.    I would ask that you also flip in the City's  
10          Exhibit notebook to Page 65.

11          A.    (Witness complies).

12                   MR. STUCKY:  I would like to mark this  
13                   as City's Exhibit 25.

14                           (City Exhibit 25 was marked for  
15                           identification by the Reporter.)

16          Q.    I will hand you what has been marked as City's  
17                  Exhibit 25.  Do you recognize this document to  
18                  be an E-mail from Mr. Boese with the Equus Beds  
19                  Groundwater Management to the City of Wichita?

20          A.    To several people at City of Wichita.

21          Q.    Are you, in fact, one of recipients of that  
22                  E-mail?

23          A.    Yes, sir.

24          Q.    A question is asked by Mr. Boese, let me ask you  
25                  this, what's the date of that particular E-mail?

1 A. July 18 of 2017.

2 Q. Now, the question is asked by Mr. Boese in  
3 bullet Number 5 of this E-mail. Could you read  
4 that?

5 A. Why was Cheney started at 110% for the 1%  
6 drought simulation for the MODSIM DSS update?

7 Q. And as you are sitting here today do you know  
8 what the answer to Boese's question was?

9 A. It wasn't, first of all, it wasn't started in  
10 the actual simulation, this is a representation  
11 of the report, I am sorry, the proposal. And I  
12 was aware of this concern on Mr. Boese's behalf  
13 and it didn't get corrected.

14 Q. Are you aware or can you point to an E-mail as  
15 far as when Mr. Boese was answered with regard  
16 to that question?

17 A. I cannot.

18 Q. Do you know if anyone from the City ever  
19 responded to Mr. Boese's question in that  
20 regard?

21 A. I can't answer that. I don't have any idea.

22 Q. And so at least until prior to today, when we  
23 have learned that it's actually 100% instead of  
24 110%, at least for that two year period, we  
25 don't have any indication that the City made an

1 effort to explain that difference, is that a  
2 true statement?

3 A. The record wouldn't indicate that we did.

4 Q. Do you have any knowledge why not?

5 A. Other than two years of hearing processes that  
6 may have delayed the process somewhat.

7 Q. Well, you told me just a moment ago that you are  
8 expected to see refinement in modeling and there  
9 was supposed to be points of clarification, that  
10 was your testimony that I highlighted just a  
11 moment ago. If that is true wouldn't it be  
12 expected that one would interface with other  
13 constituents, and especially a manager, the  
14 groundwater management to help answer that  
15 question?

16 A. I would expect that cooperation on the  
17 groundwater model, yes.

18 Q. Now, I would ask that you flip to figure 2 on  
19 Page 26 of the City's proposal.

20 MR. STUCKY: And Exhibit 25 is admitted  
21 in to evidence; is that right?

22 THE HEARING OFFICER: I don't know that  
23 it was.

24 MR. STUCKY: I move to admit Exhibit 25  
25 in to evidence.

1 THE HEARING OFFICER: Any objections?

2 MR. McLEOD: Is Exhibit 25 the  
3 District's?

4 MR. STUCKY: It was the City's Exhibit  
5 25, just to make it numerically easier to  
6 follow.

7 MR. McLEOD: No objection.

8 THE HEARING OFFICER: City's 25 will be  
9 admitted.

10 BY MR. STUCKY:

11 Q. Now, on 2-6 on the City's proposal on figure 2  
12 it indicates that there was, you indicated that  
13 the starting point on that figure appears to be  
14 167,000 acre feet; is that correct?

15 A. Uh-huh.

16 Q. Did you help to derive this figure 2?

17 A. I created that figure and submitted it to Burns  
18 & McDonnell who incorporated it in to document.

19 Q. Would you personally have entered the figure of  
20 167,000 acre feet?

21 A. In the model, yes.

22 Q. I want to also clarify some testimony that I  
23 heard just a moment ago with respect to table  
24 2-5 on Page 2-10. Mr. Oleen was asking you some  
25 questions as far as what appeared to him, and I

1 think appears to a number of us, to be an error  
2 on this particular table. And the error being  
3 the number of 15,552. On column Number 5. Are  
4 you focused on that number?

5 A. Yes.

6 Q. And I think your testimony was that perhaps part  
7 of the reason that that number was different  
8 could be that it assumed that water would be  
9 pulled from the Bentley well field, was that  
10 your testimony?

11 A. That was conjecture on my part, but I do recall  
12 a conversation with Mr. Clement wherein he was  
13 creating this graphic, or this table, utilizing  
14 data that I provided to him. And I recall  
15 something to that extent, but the details I  
16 can't remember.

17 Q. But I want to clarify your testimony, you are  
18 not exactly sure if the variance in that figure  
19 is either, A, due to an error; or, B, due to the  
20 fact that it could be that water is accounted  
21 from the Bentley well field, is that a true  
22 statement?

23 A. I have no idea. I just assumed it was a typo.

24 Q. Now, if you could flip back to section 2.3 of  
25 the model, or of the model of the, I mean of the

1 proposal rather. Are you on that page?

2 A. Yes.

3 THE HEARING OFFICER: I am sorry, which  
4 page is this?

5 MR. STUCKY: Section 2.3 on Page 2-3.

6 BY MR. STUCKY:

7 Q. In that 1% drought simulation that you focused  
8 on, in bold, raw water resources include Cheney  
9 Reservoir. Do you see that in the document that  
10 I am reading?

11 A. Yes.

12 Q. And there are five bullet points underneath that  
13 section; is that right?

14 A. Uh-huh.

15 Q. Could you read the fifth bullet point for me.

16 A. Bentley reserve well field is not considered a  
17 firm source during drought due to limiting  
18 stream flow triggers and poor water quality  
19 during lowered Arkansas River flows.

20 Q. Do you know what is meant by the terminology,  
21 firm source, end quote?

22 A. Well, in terms of the modeling, my  
23 interpretation in the form of the modeling, I  
24 understand the firm source during droughts  
25 meaning, I believe, to present the case that

1 those wells are associated with surface water  
2 event, as in a river flow. And so, therefore,  
3 the rights that are associated with those events  
4 are not accessible to us during most drought  
5 events.

6 Q. On table 2-3 it says that the concentration pool  
7 for Cheney is based on a 12 month average.

8 A. Table 2-3?

9 Q. That's right. My question how was that 12 month  
10 average was determined?

11 A. Well, in my model a 12 month average was taken  
12 as a daily pool across the previous 365 modeled  
13 days, and that's the math. And then as time  
14 proceeded, then that 365 day period changed.

15 Q. And I would also like to ask you one additional  
16 question about figure 2. Just so I am clear in  
17 the testimony, I think you said something about  
18 the red line showing actual water use in Cheney  
19 Reservoir of 62,000 acre feet during a time of  
20 the drought, or something to that effect. What  
21 was your testimony?

22 A. What I was speaking to on this graphic is I was  
23 referring to changes in the water blends. So in  
24 the first year or two you can see Cheney being  
25 rapidly declining. And that's in large measure



1 in the first year because we are taking it at a  
2 greater portion. And then later on in the  
3 drought, IE, year four or six, those downward  
4 projections of the pool are flatter, meaning  
5 there is less being taken from the reservoir.  
6 And it was depleted to no less than 60,000 acre  
7 feet. That's the number that you have in your  
8 head.

9 Q. That clarifies it. You were looking at that  
10 blue line on there?

11 A. Yes, sir.

12 Q. Do you have any knowledge of whether or not  
13 anyone from the Equus Beds Groundwater  
14 Management District asked you to clarify how the  
15 error about the 15,562 acre feet?

16 A. I distinctly remember the E-mail.

17 Q. So, in other words, you do recall being asked,  
18 at least about a year and a half ago, about  
19 whether or not or how that error --

20 A. My understanding is we were in the hearing  
21 process so we weren't going to communicate. So  
22 there was no directive for me to do that.

23 Q. So if I were to tell you on April 12, 2018, Mr.  
24 Boese E-mailed the City and asked about that  
25 exact error in that table, you wouldn't have any

1 reason to disagree with that statement?

2 A. I have no disagreement.

3 Q. And your response is, at that point you didn't  
4 find it necessary for the City to communicate to  
5 that response?

6 A. I wouldn't say it wasn't necessary, ideally we  
7 could have.

8 Q. Well, the proposal was submitted on March 12,  
9 2018, would you agree with that date?

10 A. I am certain that's correct.

11 Q. And if Mr. Boese's E-mail came exactly one month  
12 later, at that point we weren't in this hearing  
13 process; is that right?

14 A. That may be. I don't understand necessarily  
15 where you are going.

16 Q. Well, I think you said the reason why there  
17 wasn't a response was because we were in this  
18 formal hearing process.

19 A. I think that was largely, yeah, we were trying  
20 to under take this effort, and I didn't want to  
21 muddy the water to add corrections to my  
22 consultants' effort.

23 MR. STUCKY: No further questions.

24 THE HEARING OFFICER: Ms. Wendling.

25 MR. OLEEN: May I, please.

1

2

RECROSS EXAMINATION

3

BY MR. OLEEN:

4

Q. Mr. Macey, I hope this will be the last  
5 discussion about the 110% typo, but I can't  
6 guarantee it. I just want to know, I think you  
7 said that throughout this proposal any time  
8 there is a reference to Cheney being a 110% full  
9 that's a typo and it should be 100%, is that  
10 right?

11

A. Typo might not be the correct characterization,  
12 it's a misuse, it's wrong in comparison to the  
13 modeling I did.

14

Q. So the modeling that you did that's reflected in  
15 this proposal, you actually used the 100%  
16 figure?

17

A. That's correct.

18

Q. And the fact that there is a typo, or the fact,  
19 whatever you want to call it, that there is the  
20 number of 110% with reference in here to Cheney,  
21 that doesn't affect any of the other data  
22 associated with Cheney, does it?

23

A. No. Nor, does it have an affect on the data  
24 provided to Burns & McDonnell for their work.

25

Q. So, for example, that table 2-3 in the proposal,

1 even though the bottom row starts in year one,  
2 but the reference to Cheney being 110% full, you  
3 explained that that's 100. The rest of the  
4 numbers in that table we can assume are correct?

5 A. I wouldn't make that assumption, no. I mean, on  
6 that row, definitely the row, but the remainder  
7 of it is correct.

8 Q. Okay. I just want to know, if the other  
9 percentages in the other years I can assume are  
10 correct --

11 A. I don't know that.

12 Q. Why don't you know that?

13 A. I didn't review it recently, so I don't recall.

14 MR. OLEEN: Nothing further.

15 THE HEARING OFFICER: Ms. Wendling.

16 MS. WENDLING: Yes.

17

18 CROSS EXAMINATION

19 BY MS. WENDLING:

20 Q. Mr. Macey, you mentioned that you looked at  
21 multiple different iterations using this model  
22 including different starting conditions?

23 A. Yes.

24 Q. Can you elaborate what different starting  
25 conditions you remember?

1 A. Specific to the aquifer? Or to Cheney?

2 Q. Let's start with the aquifer.

3 A. Various stages of depletion in terms of  
4 numerical values. The, as John testified to,  
5 it's treated like a big bowl of water, he didn't  
6 use those terms, but it's obviously not that,  
7 but then that parameter I set in the model  
8 informs loss to the river or conversely, losses  
9 from the river to the aquifer. Those different  
10 levels in terms of the numerical range that I  
11 tested? No, I don't recall, it's been quite  
12 awhile. But I did experiment with the different  
13 levels for the aquifer as represented in the  
14 model.

15 Q. And when you were doing that, and my language is  
16 probably wrong, but you were using different  
17 input files?

18 A. It's simply a set. It's an exact parameter  
19 that's in the interphase that I set as the  
20 initial stage of that resource. It's got so  
21 many thousand acre feet in it. And as I recall,  
22 it's not a direct correlation to the number that  
23 is shown in the USGS reports. It's a lesser  
24 number than that. I know I have the resources,  
25 it's just not in the exhibits for the detail.

1 Q. So, for example, would you have been able to use  
2 a starting condition as a 1998 aquifer level  
3 versus a 2001 aquifer level?

4 A. I don't know that I had that data at the time.  
5 It could easily be done. I may just do it for  
6 fun.

7 Q. But you don't recall if you looked at any other  
8 specific starting points based on actual  
9 conditions?

10 A. Right. That would be, I would say no, I did  
11 not.

12 Q. And with the various different projects, I think  
13 you called them components that you might have  
14 looked at, you did run scenarios incorporating  
15 those, some of those or all of those at various  
16 different iterations?

17 A. Yes.

18 Q. And that included the side stream storage?

19 A. Yes.

20 Q. Is that the same side stream storage that had  
21 been considered by the City as an alternative?

22 A. That's one of the identified parts of the  
23 structures that were considered in 2014 that was  
24 brought to the City's electorate.

25 Q. On the different iterations were you, did you

1           have discretion over which iterations you  
2           determined or did someone tell you which  
3           iterations to test?

4       A.    It was at my discretion.

5       Q.    How did you determine the best outcome? You  
6           mentioned how to use water from Cheney versus  
7           the aquifer, how did you decide when you found  
8           the right ratio?

9       A.    Well, I have, through the different iterations  
10           of my efforts, some models would go in to  
11           drought stage three or four. Others would have  
12           excessive use of ASR credits, I would say those  
13           would not be considered, those are too much of a  
14           risk because we may not accrue those excessive  
15           number of credits. The use of those credits  
16           then leave the opportunity for loss, greater  
17           loss in Cheney. Those are not optimal outcomes.  
18           So the optimal I thought was to use as much of  
19           the transient resource that is Cheney. And as  
20           little as possible of the aquifer resource,  
21           meaning credits and/or base rights, to mean the  
22           optimal outcome with the caveat with the optimal  
23           outcome, also not requiring our users to go  
24           beyond stage 2 drought restrictions.

25       Q.    Did you look at any other iterations going in to

1 stage 3 of the drought resources?

2 A. I had some that were resulting in that, yes.

3 Q. Do you recall those results?

4 A. You would have to be more specific about the  
5 outcome.

6 Q. Do you recall if going in to stage 3 reduced the  
7 number of credits?

8 A. Certainly it would. You are using less of that  
9 resource and you are providing less to your  
10 customers.

11 Q. You discussed finding a balance where you could  
12 use as much of Cheney without depleting it to a  
13 state where it was no longer useful.

14 A. Uh-huh.

15 Q. Am I characterizing that correctly?

16 A. Generally, yes.

17 Q. How did you come to the point Cheney was no  
18 longer useful?

19 A. Maybe that's a bad terminology on my part. You  
20 would try to avoid depleting Cheney to the point  
21 where you have less than some number of months  
22 of water available in that. I think I might  
23 have utilized a six-month supply as my bear  
24 minimum from Cheney. This is strictly from one  
25 of the many things I did, but utilizing that as



1 a bear minimum, as a buffer in case my model was  
2 wrong, I think is a responsible effort.

3 Q. But you were to determine what that buffer was,  
4 there wasn't a model or a formula approach to  
5 tell you the scientific buffer you need so that  
6 Cheney is not depleted?

7 A. No, that was strictly my work with the model and  
8 informing my managers this is the outcome of my  
9 effort and making them aware of what I am trying  
10 to do and receiving guidance. It was strictly  
11 my result, my effort.

12 Q. In regarding communication, were you instructed  
13 not to communicate during the hearing process?

14 A. No. Again, as I said, I did not want to throw a  
15 bunch more corrections in to somebody else's  
16 work until we were further along, and then it  
17 was the hearing process. So that was my  
18 thinking.

19 MS. WENDLING: No further questions.

20 THE HEARING OFFICER: Mr. McLeod.

21 MS. WENDLING: One second. Could I  
22 admit 26?

23 MR. STUCKY: I failed to admit Exhibit  
24 26, can I admit it.

25 THE HEARING OFFICER: That was the

1 E-mail from Mr. Boese.

2 MR. STUCKY: Yes. It was 101 and I  
3 believe I didn't admit it.

4 THE WITNESS: Which one?

5 MR. STUCKY: 101 of the City's  
6 correspondence. Another E-mail on the back. I  
7 am not sure that was formally admitted and  
8 that's what was being referenced.

9 THE HEARING OFFICER: That wasn't even  
10 marked, right?

11 MR. STUCKY: It wasn't marked, I am  
12 just cleaning up.

13 THE HEARING OFFICER: Any objection?

14 MR. OLEEN: Sorry, what are you wanting  
15 to mark?

16 MR. STUCKY: E-mail 101 of City's  
17 correspondence, as Exhibit 26, City's Exhibit 26  
18 is how I want to mark it. It was testified to.

19 THE WITNESS: And I think where we fell  
20 apart he didn't direct me to it.

21 MR. OLEEN: You mentioned it. I don't  
22 have a problem. I prefer it be showed to the  
23 witness.

24 MR. STUCKY: I will come back to it.  
25

1 REDIRECT EXAMINATION

2 BY MR. MCLEOD:

3 Q. Mr. Macey, the document that you sent to Burns &  
4 McDonnell for peer review and didn't hear back  
5 on, what you did there was basically plotting an  
6 elevation on a cross section, wasn't it?

7 A. Yes.

8 Q. Does your qualification as a professional  
9 engineer, in your opinion, make you capable of  
10 plotting an elevation on a cross section?

11 A. Certainly.

12 MR. MCLEOD: No further questions.

13

14 RECROSS EXAMINATION

15 BY MR. STUCKY:

16 Q. Could you flip with me under the City's  
17 correspondence to the document that is 101 in  
18 the City's correspondence? Does that appear to  
19 be the E-mail that we spoke about just a moment  
20 ago?

21 A. Yes, sir.

22 MR. STUCKY: I would like to move to  
23 mark that as City's Exhibit 26.

24 (City Exhibit 26 was marked for  
25 identification by the Reporter.)

1 THE HEARING OFFICER: Any objections to  
2 26 being admitted? Hearing none.

3 MR. McLEOD: Is there some duplex  
4 printed on that that needs to be addressed for  
5 clean up?

6 THE HEARING OFFICER: Yes.

7 MR. STUCKY: The back page we would  
8 agree is not part of what we are admitting.

9 MR. McLEOD: With the understanding  
10 it's not part of the E-mail, we don't have any  
11 objection to admitting it as an exhibit.

12 THE HEARING OFFICER: Page 101 and only  
13 Page 101, City's Exhibit 26, is admitted. Mr.  
14 Stucky.

15 MR. STUCKY: No further questions.

16 THE HEARING OFFICER: Are there any  
17 other questions for Mr. Macey? Hearing none,  
18 Mr. Macey, you may be excused.

19 THE WITNESS: Thank you.

20 THE HEARING OFFICER: Should we go to  
21 the next witness or take a short break?

22 MR. McLEOD: Does anybody need a short  
23 break?

24 THE HEARING OFFICER: No. Let's roll.

25 MR. McLEOD: Next call Daniel Clement.

1 DANIEL CLEMENT,  
2 was thereupon called as a witness herein, and  
3 after having first been duly sworn to testify to  
4 the truth, the whole truth and nothing but the  
5 truth, was examined and testified as follows:  
6

7 DIRECT EXAMINATION

8 BY MR. McLEOD:

9 Q. Please state your name for the record.

10 A. My name is Daniel Clement.

11 Q. Mr. Clement, do you have any post secondary  
12 university degrees?

13 A. I do have a bachelor of science degree from  
14 Kansas State University in geology.

15 Q. Do you have any professional licenses or  
16 registrations?

17 A. Yes, I am a licensed professional geologist in  
18 the State of Kansas.

19 Q. And where are you employed, Mr. Clement?

20 A. With Burns & McDonnell currently.

21 Q. What is your job title?

22 A. I am a hydro geologist.

23 Q. And what sorts of things generally do you do?

24 A. So we have a number of clients obviously in the  
25 industrial sector and municipal sector, my job

1 mostly entails water rights consulting, water  
2 rights evaluations, water supply planning, new  
3 well construction, new well siting, aquifer  
4 investigations, sustainability investigations,  
5 groundwater interaction, groundwater modeling  
6 are the things hydro geologists do.

7 Q. How long have you worked as a hydro geologist?

8 A. I will be going on, let's see here, it will be  
9 right at almost seven years with Burns &  
10 McDonnell, and a couple of years before that, so  
11 about ten years total.

12 Q. Looking in the lime notebook, Mr. Clement,  
13 behind the tab expert reports, and actually  
14 after the last report that's in there, where the  
15 CV and professional resumes are clipped. Do you  
16 find a copy of your CV or professional resume in  
17 there?

18 A. You said in the lime?

19 Q. Lime notebook.

20 A. Point me to it. It would save everybody some  
21 time.

22 MR. McLEOD: I will have the document  
23 marked by the reporter as City 27.

24 (City Exhibit City 27 was marked for  
25 identification by the Reporter.)

1 BY MR. McLEOD:

2 Q. What is that document?

3 A. This would be my resume or CV.

4 Q. Did you participate in the generation of this  
5 document?

6 A. Yes.

7 Q. How long ago was it generated?

8 A. It was before the proposal, I would assume.

9 Q. At the time that it was generated was it a true  
10 and accurate account of your relevant  
11 experience?

12 A. Yes.

13 Q. And what sorts of things have happened since  
14 that might require it to be updated?

15 A. I have a couple of other projects that might be  
16 relevant. I have done some work for the City of  
17 Olathe, and I have done work for the City of  
18 Hays' well field, groundwater modeling, I have a  
19 couple of other projects that may be applicable  
20 here.

21 Q. Can you give us a short description of each of  
22 those.

23 A. Sure. I will look at what's on here so I don't  
24 duplicate anything. I have do have one on here  
25 that would have been for another industrial

1 client that were looking at de watering for a  
2 CCR control permit essentially, what to do with  
3 whole combustibile residuals. So looking at how  
4 new groundwater pumping and changing the  
5 location of their well field would essentially  
6 de water that area that was of interest. And  
7 basically constructed a groundwater model for  
8 that program and different river elevations and  
9 similar packages as what we used for the USGS  
10 model. So that would be one example.

11 Another example would be an update for  
12 the City of Hays, there that's on the resume at  
13 least, the GMC5 model, the Big Bend model, we  
14 updated that model, at least the pumping  
15 conditions that were within it, made some  
16 modifications to it and ran that for the City's  
17 purpose.

18 The other one that comes to mind that  
19 doesn't appear to be on here, would be the City  
20 of Olathe that I mentioned. The construction of  
21 groundwater model. The purpose of that was to  
22 look at well-to-well interference, how  
23 individual vertical wells could essentially be  
24 spread out and not impact one another looking at  
25 interference drawdown to optimize that well



1 field.

2 MR. McLEOD: I offer the exhibit for  
3 admissions.

4 THE HEARING OFFICER: Any objections?

5 MR. STUCKY: No objections.

6 THE HEARING OFFICER: City 27 will be  
7 admitted.

8 BY MR. McLEOD:

9 Q. Mr. Clement, in the back binder where the City  
10 proposal appears, which has been previously  
11 admitted as City's Exhibit 1. Please go to  
12 table 2-4.

13 A. (Witness reviews documents). Okay. I have  
14 arrived at table 2-4.

15 Q. Can you please explain for us how you developed  
16 and selected the groundwater modeling variables  
17 to simulate the 1% drought described by Mr.  
18 Winchester.

19 A. Sure. Our goal, Burns & McDonnell's task was to  
20 take the USGS groundwater model and provide  
21 inputs to that model that would simulate the 1%  
22 drought. And I think, as John Winchester  
23 touched on earlier, in order for us to update  
24 the model, to provide inputs to the model, it  
25 take things like precipitation, it takes things

1           like stream gauge info in order to create the  
2           stress periods for those years. Well, the first  
3           thing we looked at from Mr. Winchester's work it  
4           looked like a period of the 1930s drought would  
5           be the drought we would want to include in our  
6           modeling simulation, if that makes sense.

7                        So the first thing we did was looked at  
8           what the available data was both within the  
9           existing USGS model and what we could create if  
10          those weren't in it. I believe the USGS  
11          contained periods of 1939 to 2008 in the  
12          transient simulation. So obviously we would be  
13          missing some of the years within the 1930s  
14          drought.

15                       The first thing I did was look at the  
16          available hydro geologic data and rebuild those  
17          years, specific for 1930. And what we  
18          immediately found is, quite simply, the  
19          available data wasn't there. So the number of  
20          the precipitation gauges was very, very limited  
21          around there and also the stream flow data, at  
22          least in accordance with the original model  
23          documentation wasn't available. So we had to  
24          look at developing alternative method using  
25          surrogate years or another method to develop our

1 stress period for creating 1% drought. That's  
2 basically what table 2 is.

3 So if you look there, and as Mr.  
4 Winchester testified earlier, we have the period  
5 that we are looking at from 1933 to 1940 that we  
6 were kind of targeting. And he did mention  
7 cumulative PDSIs, one of those indicators for  
8 total depth or in terms of what does it total up  
9 in terms of duration. So our goal was to match  
10 that. We looked at the available years. We  
11 downloaded data from NOAA, to get both six  
12 months PDSI and 12 month PDSI, those are listed  
13 in the table. And then we totaled those up to  
14 cumulative PDSI and compared it.

15 So you can see that the 1933 and 1940  
16 average for south central Kansas was around  
17 negative 2.64. That would be the first gray  
18 line row down at the bottom. And if we are  
19 looking at a six month value of that, an average  
20 of negative 2.7. The 1933 to 1940 cumulative  
21 would have been negative 24.09 for the 12 month  
22 annual, and then the six-month would have been  
23 negative 21.58.

24 So in other words, we were trying to  
25 target anywhere from negative 21 to negative

1 21.58, somewhere in that realm. So in order to  
2 do that, since we couldn't simply go get the  
3 data from 1930s and create model inputs for  
4 that, we had to look at, okay, are there other  
5 transient data available within the USGS model  
6 that has already been created. So over a period  
7 of 1939, all the way to 2008, and also  
8 subsequent updates from the accounting reports  
9 that had been done to that model, we actually  
10 had data from 2011 and 2012 for stress periods.

11 So we said, let's look at that and see  
12 how that totals up, if we could repeat those for  
13 essentially back-to-back, 2011 to '12, to create  
14 a total period of eight years, what would that  
15 look like in terms of cumulative PDSI. And  
16 that's what is shown there in the chart.

17 So that's how we developed our target  
18 years to simulate, and that's what is shown  
19 there in table 2-4, is 2011 and 2012 repeated  
20 basically to create a cumulative PDSI with the  
21 right target range for simulating a 1% drought.

22 Q. When you use the term stress period, Mr.  
23 Clement, is the stress period basically a year  
24 modeled in the drought model later?

25 A. Yes.

1 Q. On the 12 month and six-month PDSI figures, do  
2 those show up in the NOAA data as 12 month and  
3 six month seasonal figures?

4 A. I believe you would have to divide each one by  
5 12 and 6, accordingly in the accompanying  
6 attachment.

7 Q. Is the PDSI a concept that NOAA uses?

8 A. I believe it is, just because it is a six-month  
9 seasonal relative to the growing season. So  
10 they provide that in accompaniment in the 12  
11 year to provide some relative feedback on the  
12 growing season and the total year as a whole for  
13 a perspective.

14 Q. Do you know what six months they consider to be  
15 the growing season?

16 A. Off the top of my head, I don't recall.

17 Q. And if I am understanding correctly, when you  
18 talk about the 1930s drought, as Mr. Winchester  
19 had modeled it, you are looking at the  
20 cumulative PDSI that he derived for the entire  
21 drought period, and you are trying to find years  
22 that will sum up to that same cumulative PDSI,  
23 and 2011 and 2012 were the years that you found  
24 would do that?

25 A. Correct.

1 Q. If you would, flip back further in the proposal  
2 to table 2-5.

3 A. Okay.

4 Q. And first I believe that this is the table where  
5 we are having an issue with whether maybe there  
6 is a mathematical error in the table. Can you  
7 speak to that error, which I think is in column  
8 five.

9 A. Yes, sir. I think, so we are in model stress  
10 period 5 under the row of City of Wichita ASR  
11 Pumping (AF). So if you, well, the total Equus  
12 Beds in ASR that demand of 56,579 I believe that  
13 to be correct. I believe that City of Wichita  
14 ASR credit pumping in that row for stress period  
15 number 5, I believe is a typo.

16 Q. What do you believe is the correct figure for  
17 that box should be?

18 A. A delta, let's see, 16,579.

19 Q. So basically it would be the total Equus Beds  
20 well field in ASR acre feet number minus the  
21 40,000 acre feet?

22 A. That's correct. And actually it hits my brain,  
23 I recall, maybe it was after the first public  
24 information meeting, after the information what  
25 you submitted we found that typo. And I sent

1           that to GMD or DWR, to somebody. I believe that  
2           has already been addressed.

3       Q.    And let me back up and ask you as to the table  
4           2-4 question that I didn't ask you, did you  
5           generate that table 2-4?

6       A.    Yes.

7       Q.    And is the same true of this table 2-5?

8       A.    Yes.

9       Q.    And can you please explain for us how you  
10          developed the groundwater pumping values within  
11          the 1% drought groundwater model?

12      A.    Sure. So I will go by row-by-row here to make  
13          things simple. The future, and I will try to  
14          cover it call, I think it would be beneficial  
15          for everybody. So the first row is future  
16          demand planning year, so, in other words, 2060,  
17          2061. That would be the year that we are  
18          planning for the future. So the City is  
19          planning out through 2060. If you guys can  
20          imagine that as the first year that we would be  
21          simulating here in the table.

22                    So the stress periods in all the way  
23          through 10. Let's go to that next row,  
24          simulated hydrologic year. So we are simulating  
25          the things in that hydrologic year that we are

1 saying is 2060, we are going to say it was as  
2 dry as 2011. So things like precipitation,  
3 aquifer recharge stream flow, not manmade, this  
4 is what the climate is, and those contributions  
5 go in to the model according to 2011 and 2012  
6 and step through all the way through that row.  
7 Until you get over to, let's say, stress periods  
8 9 and 10 where we use two recovery periods. And  
9 2010 was a relatively wet period and that was  
10 the only thing that was asked to be in the model  
11 and two years of recovery.

12 So again, these are kind of  
13 representative, but also I will go down and  
14 cover all three real quick. Stream flows  
15 precipitation and recharge and  
16 evapotranspiration, or ET for short. Those were  
17 repeated, 2011 and 2012 accordingly. So the  
18 precipitation in the year 2011 and the first  
19 stress period. Same thing, we just varied the  
20 hydrologic cycle according to 2011, accordingly  
21 to stress periods.

22 So pumping would be the next one. So  
23 for other people, non city pumping, irrigation  
24 and industrial and other well pumping, we  
25 actually used the 2011 or 2012, DWR reported max



1 to the hydrologic year. So those would be DWR  
2 reported numbers. The only exception to that  
3 irrigation, it is modified slightly based on the  
4 type of irrigation system. All that was done in  
5 accordance with the USGS model documentation.

6 So if someone uses a center pivot that  
7 has a different efficiency, than let's say drip  
8 tape, that's accounted for. And some of that  
9 actually flows back to the aquifer. So that's a  
10 net pumping value that goes in to the model.

11 The next line is total Equus Beds well  
12 field and ASR demand. This would be total  
13 demand to the Equus Beds well field, if you want  
14 to think of it that way. Both the ASR credits  
15 and just the normal 40,000 acre feet, if it's  
16 required for demand. That comes from the City's  
17 MODSIM DSS model, so the City told basically  
18 told Burns & McDonnell, here's what we think  
19 we'll need under a 1% drought, we need you guys  
20 to run the model and see what it looks like in  
21 terms of water level changes, do we need to  
22 change the lower index levels. That was the  
23 purpose of that.

24 So the 34,202, those numbers would have  
25 come from the City's MODSIMS DSS runs to figure

1 out how much demand we wanted to place to the  
2 Equus Beds and ASR credits. So the next line,  
3 which we just corrected, that was the delta  
4 between the 40,000 acre feet and the City's  
5 native rights and ASR pumping credits. That's  
6 not cumulative, that is just showing the  
7 difference for the record.

8 And then Cheney Reservoir pumping, we  
9 don't simulate Cheney Reservoir within the USGS  
10 Equus Beds model, we just wanted to have it all  
11 summarized in one table. It also shows, because  
12 again, we thought it would be good to have it  
13 all in one table, the drought stage that the  
14 City would be in the drought response plan.

15 Again, it's just to have it all in one  
16 spot so we could see how the City's response  
17 plan is kicking in, and also changing demands  
18 that's being sent to the Equus Beds model. And  
19 then the conservation pool number, or percent of  
20 conservation pool, again, I think that 110% to  
21 be consistent what Scott put together based on  
22 what I saw. I think the 110% number is wrong,  
23 it's just a typo. We did do a number of runs  
24 with the City to look at the affects to be able  
25 to store additional water above conservation

1 pool. I believe there are some preliminary  
2 negotiations, but I think that number should be  
3 hundred percent. And those numbers would have  
4 been supplied by the City's MODSIMS DSS model.  
5 Again, we don't simulate Cheney Reservoir with  
6 the groundwater model. And then total demand  
7 essentially by the City is shown there at the  
8 bottom. So long way saying here's what's in  
9 table 2-5.

10 Q. So it would be that, that row City of Wichita  
11 ASR Credit Pumping by acre feet that would  
12 reflect what the City, based on its demand  
13 forecast would think it would need to draw in  
14 credits in each of those model stress periods;  
15 is that correct?

16 A. Correct.

17 Q. So none at all in the first year of the drought,  
18 5,651 acre feet in the second, and then in the  
19 third 19,907 acre feet, which that's pretty much  
20 going to be all the City can take with its  
21 limit; is that correct?

22 A. I believe that's correct.

23 Q. And in all the other years it's smaller than  
24 that 19,907. Why did we add recovery years?

25 A. I believe that was at the request of either GMD

1 or DWR. We wanted to see, number one, that the  
2 model didn't continue to illustrate that  
3 declines happened after pumping strategy were  
4 changed back to normal years. That was one  
5 check. And the other was to show that it did  
6 recover, and if it did recover, under let's say,  
7 slightly than wetter conditions, what would that  
8 look like.

9 Q. Mr. Clement, did you develop any maps or figures  
10 based on the model results to illustrate, and  
11 when I say model results, I mean the ones that  
12 you derived using the groundwater modeling?

13 A. Sure. So the way this worked is for at least  
14 the set up of the model and we can field through  
15 questions is, I set up the pumping and most of  
16 the inputs for the drought model run. I had  
17 another colleague run the model, just to be  
18 efficient with our time so that as we were doing  
19 iterations make sure I could develop, while not  
20 watching model run, just for licensing. And  
21 post processing, the generation of the figures  
22 would have been my role. So pre and post  
23 processing would have been my role in this. And  
24 the number of figures and maps, those are all  
25 being generated by me.

1 Q. Let me back up and ask this question. What was  
2 the groundwater model that you used to do the  
3 modeling of the drought periods?

4 A. It would have been the USGS Equus Beds  
5 groundwater model that was, and I don't remember  
6 the Scientific Investigations Report, but  
7 2013-5042, if it's burned in right, it would  
8 have been that groundwater model.

9 Q. Was that the same model Dr. Akhbari and Mr.  
10 DeAngelis were testifying about yesterday?

11 A. Yes.

12 Q. In the maps and figures in the proposal, do you  
13 have any that you did based on model results to  
14 illustrate simulated water level changes  
15 throughout the ASR project area?

16 A. Yes, we try to output every stress period to  
17 illustrate how things would change. We did that  
18 in a number of tables as well. So I believe  
19 starting with figure 5 through 8, at least, we  
20 showed different levels based on different  
21 stress periods to show how things were not only  
22 changing over time, over specific stress  
23 periods, but over space, too.

24 We also had, it looks like table 2-9  
25 provides a pretty decent summary model response

1 just for general geographic areas, if you would  
2 like to review that.

3 Q. Going to that table, 2-9.

4 A. Okay.

5 Q. Can you explain the values provided within the  
6 proposal in table 2-9.

7 A. Sure. This is our run using the model inputs we  
8 talked about previously. The stress periods are  
9 listed there at the top. So SP1 using 2011  
10 value and SP2 would be 2012 and repeat. So the  
11 first row, let's start there, the ASR basin  
12 storage area average water level starting  
13 conditions. Starting conditions I believe were  
14 based on 1998 groundwater level conditions. So  
15 what these columns are showing then is the  
16 departure from that initial condition. Year one  
17 we essentially had 1.8 feet of fall within the  
18 basin storage area, on average, all the way  
19 through, if we go to stress period, 8, roughly  
20 8.2 feet of drought across the entire basin  
21 storage area, from initial starting conditions.

22 The central well field storage area  
23 next line, 2.1 drop in the first year all the  
24 way through to stress period 8 where we see an  
25 11.6 drop on average within the central well

1 field storage area. The next lines are taking  
2 those specific geographic areas and using GIS to  
3 come up with saturated thickness within that  
4 area and then providing a relative full  
5 condition based on the predevelopment level and  
6 the level at which each interval ends up, each  
7 stress period.

8 Q. So when you talk about using GIS, is that the  
9 manner by which you would determine what the  
10 affect would be in a particular index cell or  
11 vicinity of a particular well?

12 A. So what GIS allows for post processing for all  
13 results. We also use a software called  
14 Groundwater Vistas. It's good for individual  
15 things but not for doing statistics. So we  
16 export the results from our modeling software,  
17 essentially GIS, to allow, for like you just  
18 said, processing of what happens over a  
19 geographic area of an index cell, for example,  
20 or basin storage area, for example, or central  
21 well field, for example; rather than going  
22 through each cell and come up with individual  
23 numbers that way.

24 Q. And so in, this table 2-9, this is based on the  
25 assumptions that are outlined in the earlier

1 table 2-5, these are the modeling results that  
2 follow from those assumptions?

3 A. Yes. Just making sure we have the table numbers  
4 correct, yes.

5 Q. So the table reflects the water level changes  
6 with the City pumping its base water rights, and  
7 then in the years where it needs credits, also  
8 pumping the credits that it needs?

9 A. That's correct.

10 Q. So some of the water level changes shown in the  
11 exhibit are from the City pumping its base water  
12 rights, while others would be, parts of others,  
13 would be from recovery of ASR credits; is that  
14 correct?

15 A. Yes.

16 THE HEARING OFFICER: I have a  
17 question. If I follow what you are saying,  
18 table 9 reflects the results of the line on  
19 table 2-5. So it is the total Equus Beds well  
20 field and ASR pumping?

21 A. Say that again.

22 THE HEARING OFFICER: In other words,  
23 if those quantities are pumped in those years,  
24 table 9 shows what would happen?

25 A. That's correct. With the addition of



1 agricultural pumping and industrial pumping  
2 included in those numbers. So we included other  
3 users on top of the City's pumping. So it will  
4 have ASR credit recovery, City of Wichita's  
5 normal base rights, ag pumping, industrial  
6 pumping, all of those would be reflected in  
7 these water level changes in the percent of full  
8 conditions represented in table 2-9. So the  
9 model input shown in 2-5, the stress periods  
10 correlate to the reaction of the aquifer in  
11 table 2-9.

12 THE HEARING OFFICER: Looking at table  
13 2-5, that same row that we are talking about,  
14 the total Equus Beds and ASR pumping, I think  
15 you said that the City provided those numbers.  
16 Are those numbers that were actually pumped in  
17 2011 and 2012?

18 A. No.

19 THE HEARING OFFICER: Did that change?

20 A. That's the theoretical number that the City  
21 believes that they would have to take out based  
22 on a projection through 2060. So in 2011 and  
23 2012, all of the other pumping was kept the  
24 same, so the reaction of irrigators in 2011 are  
25 represented, the reaction of industry and other

1 municipalities are represented in those stress  
2 periods that are listed here. But since we are  
3 talking about a theoretical, up to 2060, we  
4 said, okay, let's take the demand we think we'll  
5 need with ASR, and all the other things that's  
6 in the MODSIM DSS model, we had the demand for  
7 the Equus Beds, and ASR provided from the MODSIM  
8 DSS modeling incorporated that year.

9 We are assuming that the reaction of  
10 irrigators, and everyone else, would be the same  
11 as 2011. So the pumping that's shown in stress  
12 periods one through ten is the combination of  
13 kind of everybody doing what we anticipate they  
14 would do in 2060, including the City, if that  
15 makes sense.

16 THE HEARING OFFICER: So the only real  
17 anticipated changes factored in is the City's  
18 pumping?

19 A. Yes.

20 BY MR. McLEOD:

21 Q. And I think you clarified in that series of  
22 answers, Mr. Clement, that some of the water  
23 changes going in to the table there would  
24 actually be from the agricultural and industrial  
25 pumping as well?

1 A. Yes. That's also included in the water level  
2 drops and percent full conditions, yes.

3 Q. Below the table 2-9 there is a notation that you  
4 did hydrographs on individual index cells.  
5 Where in the proposal do those hydrographs for  
6 each of the index cells appear?

7 A. I believe that cites, I am reading here. We  
8 generate a hydro -- well, it looks like  
9 Attachment I.

10 Q. Let's go to that attachment.

11 A. I have arrived at Attachment I.

12 Q. And let's start with the first hydrograph. What  
13 index cell is that hydrograph? Well, let me  
14 back up and confirm. Were these also graphics  
15 that you generated?

16 A. Yes.

17 Q. And the first hydrograph in the set, what index  
18 cell is it for?

19 MR. STUCKY: Can we pause for just a  
20 moment. Tell us the page again.

21 A. We are in Attachment I, that I am looking at.  
22 And about, well, if we were referencing the  
23 first hydrograph, I would be on one, two, three,  
24 the fifth page.

25 BY MR. McLEOD:

1 Q. So, Mr. Clement, this hydrograph it appears to  
2 follow kind of a standard format where you are  
3 showing a set of things in this graphic format  
4 for each of the index cells. Can you walk us  
5 through what this graphic is doing, and what the  
6 different components of this graphic are  
7 showing.

8 A. Sure. I think it would be easier to start at  
9 the legend. So on the left side, IW1A and IW1C,  
10 two different colored lines there. So we  
11 exported from the model, from the upper layer of  
12 the model correlating to IW1A, and from the  
13 lower layer of the model at that location would  
14 represent IW1C. You can see that those lanes  
15 basically overlap one another. There is not  
16 much head difference between those two, at least  
17 not on this example. And we are plotting the  
18 elevation change through time. The right axis  
19 is a little bit different. Let's ignore that  
20 one for now. What we are showing, starting  
21 conditions, essentially all the way through  
22 ending conditions, how water levels is changing  
23 over time as predicted by the model for both the  
24 upper and lower aquifer, at the location of the  
25 index well on this instance on this hydrograph.

1           The purple bars that are vertical, represent the  
2           percent of predevelopment of the aquifer. And  
3           when I say predevelopment I mean pre 1930s, when  
4           we knew pumping occurred when the aquifer was as  
5           full as it would get. So that's hundred percent  
6           full by this definition. And then looking at  
7           bedrock average of the index cell would  
8           represent the bottom. So we look at what that  
9           whole saturated thickness is and that is a  
10          relative percent full as plotted through time  
11          here.

12                        The other things that are plotted on  
13          here, we have groundwater elevations from 1993.  
14          We also have groundwater, or the ground surface  
15          elevation, as just illustrated, general depth of  
16          bedrock, if someone wants to calculate that from  
17          the left side. The blue line is the upper  
18          groundwater elevation and red line is the lower  
19          groundwater elevation at this particular site  
20          for this example.

21        Q.    So would that red line on the graph be a  
22              reflection of the 1993 index level?

23        A.    Yes.

24        Q.    And in this graph, as we are going, well, along  
25              the bottom where it says we are going through

1 the ten-year period from the start to the end.

2 And is this graphic showing that the impact of  
3 the model pumping never reduces the water levels  
4 in this index cell below the 1993 index level?

5 A. That's correct.

6 Q. Let's go to the next one. And the thick black  
7 bar near the top of purple columns, is that your  
8 ground surface level?

9 A. That's correct.

10 Q. So now I have to ask this question to clear up  
11 confusion. The purple columns extend upward,  
12 well above that black bar that is showing ground  
13 surface level, I should not conclude from that  
14 that the water levels will be that high above  
15 the ground surface level in those ten years of  
16 drought modeling, should I?

17 A. No. That would be an incorrect conclusion.  
18 This is the limits of the Excel plot that we had  
19 at the time to create double axis, that is why  
20 we see those purple.

21 THE HEARING OFFICER: Can you explain  
22 that?

23 A. Yes. The purple values are the only ones that  
24 we want to read off of the right side axis, if  
25 that makes sense. The vertical purple bars are

1 the only things correlating to the right side,  
2 percent remaining full. The limits of the Excel  
3 program that we had for this particular graph  
4 set up wouldn't let us correlate the elevation  
5 to, in this case, percent full without creating  
6 some anomalies, it would make the lines flat for  
7 the water elevation changes.

8 THE HEARING OFFICER: So when we look  
9 at these we disregard the purple elevations  
10 unless we are looking at the right axis?

11 A. Perfect.

12 BY MR. McLEOD:

13 Q. In addition to that, in this graph we see that  
14 the, that the AMC pumping lines, they do in this  
15 one, go below the red line in about year four or  
16 five. It's hard to tell by reading the graph,  
17 but it looks like maybe they get there at year  
18 four.

19 A. Yes.

20 Q. And this one they end up below the 1993 levels  
21 as an impact of the model drought?

22 A. That's correct.

23 Q. Let's go to the next one. And on this one are  
24 we saying that basically from the get go we are  
25 going to be in trouble with the 1993 index

1 levels in this cell.

2 A. Let me find hydrograph 3 here. Okay.

3 Q. It looks like the pumping is going on in this  
4 simulation below the existing 1993 index levels.

5 A. Yes.

6 Q. And so under the current permit conditions we  
7 wouldn't be taking credits from this well in  
8 this model drought?

9 A. Yes, if we had infrastructure available to  
10 recover credits in this case, cell 3, it would  
11 not be allowed, that's correct.

12 Q. Let's look at the next one.

13 A. Okay.

14 Q. This one is also, this one is showing basically  
15 through the model drought we don't get below the  
16 1993 index levels in this cell; is that correct?

17 A. That is correct. At least for the lower aquifer  
18 value, which I believe is what the index levels  
19 are set from.

20 Q. What is the blue straight line that goes across?  
21 Is that the upper level?

22 A. That's correct. Well, no. The blue line, well,  
23 there are generally two index sites, an upper  
24 index well and lower index well, depending where  
25 you go in the aquifer, we see some had



1 differences between those, others had very  
2 little. So we decided to plot those just for  
3 informational purposes. I believe the one that  
4 is permitted, and the one we should be referring  
5 to, is the red.

6 Q. I wanted to make sure that we did a few of these  
7 so that I could understand how to correctly read  
8 what they are trying to depict. And the purple  
9 bars, red against the right index, those are  
10 attempting to depict what, Mr. Clement?

11 A. The relative percent full of the aquifer based  
12 on an average of the index cell. So we look at  
13 the water level elevation for that particular  
14 year, and we compare it as a percentage to  
15 predevelopment, and then come up with that  
16 percentage and plot it as a the purple bar.

17 Q. What's the area of each of these index cells,  
18 how big are they?

19 A. I believe they are roughly four square miles  
20 total.

21 Q. So all of the wells within this index cell they  
22 would be within that 4.4 square mile area?

23 A. Yes, the index wells are generally located in  
24 the index cells, yes.

25 Q. Okay. So if I am understanding what you are

1 saying about the purple bars, when I look at the  
2 first year, it is almost, the aquifer is almost  
3 hundred percent saturated in this scenario. And  
4 when we get back to, when we get back, well,  
5 year ten is a recovery year, isn't it; but it  
6 looks pretty flat, from years 8 through 10 we  
7 are about 95 percent saturated in this index  
8 cell?

9 A. According to the graphic, yes.

10 Q. Thank you. I think I understand now what you  
11 are doing with those. So this is kind of the  
12 set of data that let you know as to the various  
13 index cells what drought year the City gets in  
14 trouble with the 1993 index levels in the  
15 various cells; is that correct?

16 A. That's correct.

17 Q. And so it gives you the picture, when you  
18 consider the data that's provided by all of  
19 these, the hydrographs and the modeling results  
20 that relate to them, it gives you the data of  
21 the drought year in which the City becomes  
22 unable to recover its credits in each of those  
23 index cells?

24 A. Yes. And I believe we actually generated that  
25 as a figure in the front end of Attachment I, so

1 we provided, I believe a spatial distribution of  
2 that just to illustrate where and when that  
3 occurs in the drought years.

4 Q. Let's go back and look at that figure as well  
5 and walk us through that.

6 A. Sure. So basically the index cells there that  
7 are kind of the boxy areas, we have put this out  
8 to the basin storage area. You can see that, it  
9 is kind of the bigger outlying area in purple.  
10 And we also had the central well field storage  
11 area in the smaller box in the middle. In the  
12 upper right-hand corner is the legend and it  
13 starts at year one in kind of red and orange and  
14 goes on through year six of the drought. This  
15 is showing when and where credits would become  
16 unavailable based on the drought model  
17 conditions. So it gives you a spatial  
18 distribution and when that would occur by index  
19 cell according to the model results.

20 Q. So in year two how many of the index cells would  
21 be in a state where the City could not recover  
22 credits under the current permit conditions?

23 A. If we say by year two you would have to count  
24 the red and orange to be correct there. So  
25 based on, and this is a printout, I am counting

1 red and orange, 1, 2, 3, 4, 5, 6, 7, according  
2 to mine, seven, that would be 38, 24, 25 and 38  
3 according to the count I just did. And 14 and  
4 18.

5 Q. And how many total in your year three would be  
6 enable to recover credits under the current  
7 conditions?

8 A. We would add IW 10 and 16 and 21 and 28 to that  
9 count.

10 Q. And the boxes that are not shaded any color, are  
11 those index cells in which the City would be  
12 able to still recover some credits throughout  
13 the entire model drought period?

14 A. Based on the drought model predictions on  
15 groundwater conditions, yes.

16 Q. Are there other considerations that would  
17 practically change that answer, considerations  
18 other than the modeling, that would have to do  
19 with what infrastructure in place in those  
20 cells?

21 A. Yes, you could have a redistribution of pumping.  
22 We distribute city pumping based on kind of a  
23 normalization of what each water right of each  
24 city was for recovery of credits. In other  
25 words, the stronger pumping wells we would

1           assume would also be stronger pumpers of ASR  
2           credits. If for some reason they weren't  
3           available or saw some change in density of  
4           population in some given area, we would see more  
5           color on the map here where, let's say, in index  
6           cell 26, is an example, you may not be able to  
7           recover credits there just because of  
8           distribution of pumping change and a change  
9           versus in what we predicted in the model.

10       Q.    So through some of my earlier questioning, and  
11           in some cases attempting questioning that was  
12           often excluded, where I was assuming that it  
13           would be a general occurrence in year two that  
14           the City would be unable to recover credits,  
15           that's too simplistic, wasn't it, as we look at  
16           the results of your modeling?

17       A.    Sure. There is a general distribution of that.

18       Q.    And this map would be a more accurate reflection  
19           of when the modeling shows for index cell that  
20           that problem would occur with respect to the  
21           1993 index levels?

22       A.    Correct.

23       Q.    Let's go in the proposal to table 2-10 and 2-11.  
24           Let's look at 2-10 first.

25       A.    (Witness reviews documents.) Which one did you

1 want to look at first?

2 Q. Let's look at 2-10.

3 A. Okay.

4 Q. How did you come up with the proposed revised  
5 ASR index levels that are in the proposal?

6 A. We took the minimum, and there are a couple of  
7 different ways here. So if we look at the  
8 fourth column from the left, it gives a basis  
9 for the proposed level. So as we saw in that  
10 previous figure, there was some locations that  
11 didn't drop below the minimum index level, but  
12 again, we wanted to be prepared for distribution  
13 of pumping, any changes in future ag pumping  
14 that may occur and changes in multiyear flex  
15 accounts, we just wanted to be prepared for  
16 that. So any ones we see existing we buffered  
17 the existing 1993 level by a number and that was  
18 generally ten feet for anything except IW1 and  
19 IW2.

20 For the ones that say modeled we looked  
21 at the output for each one of the index well  
22 sites, at least correlating to that particular  
23 model cell where that index well lied. We  
24 pulled the elevation from that throughout all  
25 the stress periods and found the minimum

1 elevation. And then we took the same approach  
2 with contingency to that minimum elevation and  
3 buffered it. In general I would say, for  
4 purposes of simplicity, ten feet.

5 Looking at the table it looks like  
6 there is a typo in column 5 under contingency  
7 added for IW1 and 2. It looks like that's just  
8 a typo, and in those two lowest levels are, it  
9 looks like accurate, it just looks like the  
10 contingency number is off.

11 Q. So in those rows as we go across, that's why the  
12 math is not tying out, that if you look at the  
13 numbers for existing level, and then the  
14 contingency and the proposed level, it doesn't  
15 come out because the contingency number is  
16 wrong, right?

17 A. At least on IW1 and 2. And also did rounding on  
18 the others, I mean, just general scientific  
19 notation on those just to get to the level  
20 precision that's appropriate.

21 Q. But you are saying in each of those rows, IW1  
22 and 2, the 1390 figure is the level that's being  
23 proposed as the new index level for those wells?

24 A. Correct.

25 THE HEARING OFFICER: I am sorry, could

1           you clarify what your correction is.

2       A.     So in IW1 and IW2, for those two rows, it looks  
3           like the contingency added the column for those  
4           two rows, it looks like there is a typo there;  
5           however, I believe the proposed levels, the  
6           farthest right column of 1390 feet for both IW1  
7           and IW2 are both correct.

8                         THE HEARING OFFICER:   What exactly do  
9           you think is typo?

10       A.    The typo would have occurred in the contingency  
11           added column for IW1 and IW2, it just looks like  
12           we may have just had contingency in there from a  
13           different model or something.

14                        THE HEARING OFFICER:   So you think the  
15           20 and 10 are an error?

16       A.    Yes.

17                        THE HEARING OFFICER:   But you don't  
18           know what they should be?

19       A.    It would be the delta between the minimum  
20           drought elevation, or no in this case it would  
21           be the existing level of 1413, the delta between  
22           1413.42 and 1390.   That would be the  
23           contingency.

24                        THE HEARING OFFICER:   But your final  
25           column is correct?



1 A. That's correct. The proposed column for 1390 is  
2 correct for those two.

3 THE HEARING OFFICER: Thank you.

4 BY MR. McLEOD:

5 Q. I also noticed Mr. Clement, in looking at the  
6 table on most of these, when you compared the  
7 minimum drought model elevation and the  
8 existing, most of the time the lower of those  
9 two, plus the contingency became the proposed  
10 level. But in the case of the second row, the  
11 IW02 well, where you have a minimum drought  
12 model elevation of 1407.96, and your existing  
13 level of 1410.52 is higher and in that row you  
14 went with the higher, the existing level for  
15 estimations for your proposed level. Why is it  
16 different in the row for that well as opposed to  
17 how it was done for all the others?

18 A. I believe there are some significant water level  
19 swings in that area. I don't recall all the  
20 specific details. Some of that coordination was  
21 done with my colleague, who ran the model; but  
22 we went with the existing. I don't anticipate  
23 any recovery at that site so to pick between  
24 1413 or 1429 working with IW2 we went with the  
25 existing. We probably thought, at the time we

1 probably thought it was simpler.

2 Q. So I mean it may not make any difference if  
3 there is no recovery infrastructure there, is  
4 that correct?

5 A. That would be my assessment, yes.

6 Q. Let's go on to look at table 2-11.

7 A. Okay.

8 Q. And let me back up and ask a question, to be  
9 clear. All of these wells that we are proposing  
10 a change in the lower index level, are those  
11 only for ASR Phase II infrastructure?

12 A. That's my understanding. The proposal and the  
13 City's wishes is that any of the proposed  
14 modifications to the index levels would only  
15 occur for Phase II infrastructure and not for  
16 Phase I.

17 Q. So the Phase I index levels are being left  
18 intact.

19 MR. STUCKY: Was that a question? It  
20 sounded like testimony by counsel whether or not  
21 the Phase I was intact. Was that a question?

22 MR. McLEOD: It was an implied  
23 question.

24 BY MR. McLEOD:

25 Q. Are the Phase I index levels being left intact?

1 A. Yes.

2 Q. I wanted to make counsel happy. I hope that I  
3 have. Let's go on to table 2-11.

4 A. Okay.

5 Q. I have one more clean up.

6 A. Sure.

7 Q. Counsel asked of an earlier witness who wasn't  
8 sure. Is the intent that wherever the index  
9 levels are posed to be changed for ASR Phase II  
10 that those levels would be changed for future  
11 infrastructure that's part of the ASR Phase II?

12 A. I anticipate that that would be part of the  
13 proposal.

14 Q. And if a person went to other ASR phases where  
15 other infrastructure were added in the same  
16 index cells, where ASR Phase II infrastructure  
17 is currently, would the proposed levels apply to  
18 those new infrastructure developments as well?

19 A. Say the question one more time.

20 Q. If there were a later phase of ASR where we  
21 added infrastructure to the same index cells  
22 that are within ASR Phase II, would these lower  
23 index limits apply to those subsequent phase  
24 improvements as well?

25 A. Yes, according to the proposal, yes.

1 Q. Thank you. Now, looking at table 2-11 can you  
2 walk us through.

3 A. The main goal is to communicate the difference  
4 in the proposed levels versus the existing  
5 levels. That's the main goal. And also to  
6 illustrate, approximate the aquifer saturated  
7 thickness, based on what the model says the  
8 aquifer saturated thickness is. And then also  
9 provide a relative percent full. People think  
10 of the aquifer in different ways, this is trying  
11 to phrase it in those different ways.

12 For example, if we go to line index  
13 cell 10 there, the existing 1993 level is  
14 1375.09, the proposed 1358, delta of 17.09. The  
15 proposed remaining aquifer saturated thickness  
16 on average within that index cell, according to  
17 model, is roughly 165 feet. And then that still  
18 leaves 76% of the saturated thickness relative  
19 to predevelopment.

20 Q. So of the numbers that are most important in  
21 this table, that existing versus proposed  
22 column, tells you how far down the proposed new  
23 limit would go from the existing limit in a  
24 particular index cell; is that correct?

25 A. That is correct.

1 Q. And then the far right column is telling you if  
2 you pumped down to that level, is it telling you  
3 if you pump down to that new proposed level, how  
4 much of the saturated thickness of the aquifer  
5 would still remain?

6 A. That's correct.

7 Q. So it looks like we have some numbers on that  
8 saturation as small as 67% and it looks others  
9 are as high as high as 90%. Do you know what  
10 the average is?

11 A. That would be calculated in one of the previous  
12 tables, entire basin storage area, it would have  
13 been that number.

14 Q. And where we are looking at the difference, the  
15 difference in depth between the existing and  
16 proposed, what's the range of numbers there?  
17 What's the one with the smallest change?

18 A. At a glance here it looks like index cell 5 at  
19 9.23. No, I found a 9.1 on index cell 9.

20 Q. What's the one that will have the greatest  
21 difference between the existing and proposed  
22 lower index?

23 A. It looks like index cell, let me go through it  
24 one more time. I believe index cell 1 at 23.

25 Q. And being a hydro geologist, can you tell me, am

1 I being oversimplistic in my thinking that if I  
2 owned a well in index cell 1 and I thought I was  
3 going to have a problem with modeling that  
4 showed impacts of pumping going down to the new  
5 proposed, or new proposed low index levels,  
6 could I fix that problem by extending my well  
7 23.42 feet, the same amount that you are  
8 changing the index level with the proposal?

9 A. Yes, I mean, that's why if you compare the delta  
10 to the remaining saturated thickness, you would  
11 have that additional 23 feet to 131 to extend a  
12 well, at least according to the model.

13 Q. So if the City reached a point that it new it  
14 was going to have to draw credits, in a  
15 prolonged drought scenario, and knew that it was  
16 going to go below in the course of that, in the  
17 1993 index levels, and that it might start  
18 worrying about whether individual wells were  
19 going to be impacted, could the City figure out  
20 in the index cells most likely to be affected,  
21 which wells would need to be extended and extend  
22 them for the well owners on the number of feet  
23 shown in that central table, and get those wells  
24 below where they would be impacted by going to  
25 the new index levels?

1 A. I believe so. It would give you an elevation  
2 basis and say I might have a problem based on a  
3 well depth and a land surface elevation and  
4 estimate that, yes, ahead of time.

5 Q. I don't know if you have background to answer  
6 this question, have you been involved with  
7 enough drilling and installation of wells to  
8 know how long it would take to do that kind of a  
9 well extension?

10 A. I think you could do a domestic. Are we talking  
11 domestic well or large completion well?

12 Q. Domestic well.

13 A. Domestic well at these depths you could probably  
14 get in and out in a day and have it recompleted.  
15 And then another day come back and do the  
16 development. So in a matter of days have an  
17 issue solved, if you needed to, assuming driller  
18 availability.

19 Q. And I think you were here for Mr. Henry's  
20 testimony where he suggested that the best  
21 approach would be to try to get that done before  
22 it caused an actual problem, is that feasible,  
23 given the time you think it would take to do a  
24 domestic well extension?

25 A. I think so, with enough heads up and

1 coordination. I don't see an issue with that.

2 Q. Based on your knowledge of the ASR recharge  
3 wells, do the recharge wells have a minimum and  
4 a maximum design recharge rate based on the  
5 physical limit of valves and piping?

6 A. Yes.

7 THE HEARING OFFICER: I have a  
8 question. And forgive me if I am missing  
9 something completely obvious.

10 A. You are doing an expert job speaking modeling.

11 THE HEARING OFFICER: Considering how  
12 little I have said. Table 2-11 that we have  
13 been looking at, the existing level column it  
14 says 1993 level, so that's the water level in  
15 1993?

16 A. Yes.

17 THE HEARING OFFICER: Which is the  
18 current --

19 MR. McLEOD: That's the index level.

20 THE HEARING OFFICER: Index level. The  
21 proposed level, which is proposed to be lower,  
22 is a higher number. So it looks to me like it's  
23 not as far down. It's less. See what I am  
24 saying? If your existing level is 1400 feet and  
25 you are proposing 1390, you are not going down



1 as far. What am I missing?

2 A. Is that, okay, these are elevations so not  
3 depths, they would be elevations above sea  
4 level.

5 THE HEARING OFFICER: That's what I am  
6 missing. Thank you. Counting from the bottom  
7 up.

8 A. It would take a long time to drill a well 1,390  
9 feet.

10 THE HEARING OFFICER: I didn't make the  
11 graph, I am trying to figure it out. Please  
12 continue.

13 BY MR. McLEOD:

14 Q. So what would be the well condition that would  
15 represent maximum recharge capacity, and a  
16 condition with the single smallest, or that  
17 would represent, excuse me, represent the  
18 minimum?

19 A. So each, I will speak to the infrastructure real  
20 quick. Each recharged well, at least in Phase  
21 II of the project, has a number of recharge down  
22 tubes which facilitate injection of that water  
23 below surface level. So those injection tubes  
24 are on the outside of the casing so until they  
25 enter the inside of the casing, generally below

1 water level. Those different tubes, the tubes  
2 are different sizes and that allows for  
3 different rates. So to answer your question,  
4 each well has a minimum and maximum rate based  
5 on the sizing of those tubes. So the minimum  
6 construction would be one of the smallest tubes,  
7 and that would be, in general, roughly 50  
8 gallons per minute versus all the tubes that  
9 were at the site being open, and those recharge  
10 rates could be, I think design is roughly 1,000  
11 gallons per minute, or even perhaps higher.

12 Q. Is recharge well capacity, is it also related to  
13 groundwater levels?

14 A. Yes. The lower the groundwater levels,  
15 generally higher the recharge capacity. The  
16 higher the groundwater levels, the lower  
17 recharge capacity, assuming if we have to  
18 maintain a buffer, a minimum of ten feet in the  
19 recharge well casing based on operations, yes.

20 Q. So as water levels in the aquifer are lower,  
21 basically that means the recharge capacity is  
22 higher?

23 A. That's correct.

24 Q. And if you can answer this, some earlier  
25 witnesses who didn't have the capability to know

1           this from the modeling themselves suggested  
2           that, that the City's ability to recharge  
3           approximately 30 million gallons per day would  
4           be at water levels in the aquifer roughly  
5           equivalent to the 1998 levels. Do you know from  
6           the modeling if that is true?

7       A.    We did not model that within the model. We  
8           didn't model recharge rates and sustainability.  
9           That's really a well-by-well question, that is  
10          more related to the infrastructure and how it  
11          actually behaves. You can generally correlate a  
12          groundwater elevation to the capacity of a well  
13          and I believe that's how that was generated. I  
14          don't recall generating that number personally,  
15          I don't know where it came from, but in my  
16          opinion, 1998 level seems comparable with the  
17          injection values to be able to create a  
18          sustained recharge rate, at a 30 MGD, I do think  
19          you could do it.

20       Q.    Did the City permit conditions, the existing  
21          conditions, limit how high water levels are  
22          allowed to get in the recharge well during  
23          recharge operations?

24       A.    I don't believe it is based on the recharge  
25          well, I think it's on a nearby site or a

1 distance, and I think that was quoted earlier;  
2 but in practice my familiarity with the City's  
3 operations I spent during commissioning of the  
4 plant and certainly commissioning during  
5 recharge events, I think the city limits, to  
6 this date, ten foot below land surface or ten  
7 foot below land surface within the well house  
8 itself, so ten foot below land surface  
9 indication would be the injection well is the  
10 limit we impose on ourselves. And I believe  
11 there is an actual permit limit that is in  
12 accordance with the ten feet below surface on a  
13 nearby observation well.

14 Q. Are any of those conditions proposed to be  
15 changed in any way in the proposal?

16 A. No. Not that I know of.

17 Q. Does the proposal include details on the  
18 eligibility of the City to approve aquifer  
19 maintenance credits based on the physical  
20 recharge capacity of the ASR system?

21 A. Yes, we developed essentially, if you want to  
22 think of it this way, what's the guarantee that  
23 the City will put physical recharge in the  
24 system. How do we figure that out? I believe  
25 we developed a table in the report, I don't

1 recall which one it was, but we took a look at  
2 developing a draft operations plan. In other  
3 words, if the City says they will conduct  
4 recharge operations, how do we know they will do  
5 that? How do we guarantee that? We got the  
6 permit condition. We took a shot at that within  
7 the proposal based on our knowledge of how the  
8 recharge wells behave in real life. We took  
9 actual operations data and regenerated that  
10 operations table that's a figure within the  
11 report.

12 Q. Let's look at figure 14 of the proposal.

13 A. Okay.

14 Q. Is this the graphic that you were referring to a  
15 minute ago in your testimony?

16 A. Yes.

17 Q. And can you walk us through this?

18 A. Sure. Let's start at the top line to keep it  
19 easy. So we have just got, as an example MRO2  
20 is an actual recharge well in the City's ASR  
21 structure as part of Phase II. This is an  
22 example of January 2016. So we actually took  
23 the City reported level, taken from that well,  
24 they actually went out and measured water levels  
25 in 2016 in January and received a total depth of

1 water 37.6 feet. That correlates, based on the  
2 design data that we have, to a static  
3 groundwater elevation at that site of 1396.9.  
4 The maximum groundwater elevation that we could,  
5 therefore, recharge to --

6 Q. Mr. Clement, can you pause just for a minute.

7 THE HEARING OFFICER: I am not finding  
8 figure 14.

9 MR. McLEOD: I saw you were flipping so  
10 I thought we should stop and let you catch up.

11 THE HEARING OFFICER: I found it.

12 A. I will start over.

13 BY MR. McLEOD:

14 Q. Thank you.

15 A. Let's start with MRO2 there, that's an actual  
16 physical well in the City's well field Phase II  
17 on the north end of City's well field. So in  
18 January of 2016 they went out and measured water  
19 levels at that well and came up with a total  
20 depth of water from top of casing of 37.6.  
21 That's an actual physical measurement. That  
22 correlates, because we have the elevations of  
23 the top of the casing and everything there for  
24 the elevation of the groundwater of 1396.9. So  
25 the theoretical maximum we could recharge,

1 assuming ten foot below ground surface at that  
2 site, would be 1420.3. That gives us an  
3 available water column. So from the static  
4 measurement to ten foot below ground surface  
5 that elevation of 23.4.

6 And then this next column I will talk a  
7 little bit more in detail. So the nice thing  
8 about this project is we have the well-by-well  
9 behavior down to a science at this point. There  
10 is skada data from each one of these sites that  
11 tells us how much water each well will take  
12 under any given condition. So in order to  
13 create injection, long term, initially the well  
14 will take a lot and then it peaks and then it  
15 stabilizes. So Burns & McDonnell looks through  
16 heaps of skada data over the full duration for  
17 MRO2 and we kind of learned what that well will  
18 take from a sustainable day-to-day basis. We  
19 think we can get five gallons per minute per  
20 foot in there.

21 Now, that five gallons per minute per  
22 foot comes from if we inject five gallons per  
23 minute we get a foot of rise in the casing, if  
24 that makes sense. So we have a total column of  
25 23.4. So those two things are going to be

1 related. Our available water column is really  
2 going to determine, along with our injectivity  
3 number, how much we can come up with a feasible  
4 recharge rate for each well.

5 So this is our attempt to look at how  
6 much recharge well will do. You could do that  
7 across the entire well field and then come up  
8 with theoretical recharge capacity for, in this  
9 case, Phase II, or at least the recharge  
10 injection sites.

11 So if we stick with MRO2, based on the  
12 water column available, and the injectivity rate  
13 in gallons per minute per foot, we can get about  
14 117 gallons per minute in there sustainably. We  
15 know that our maximum well infrastructure  
16 recharge rate, based on all of the down tubes  
17 open, is thousand gallons per minute, by design,  
18 that is a hydraulic design. We know that our  
19 minimum well infrastructure recharge rate is 125  
20 gallons per minute.

21 So in this case we have an actual  
22 infrastructure. The minimum rate we can inject  
23 at is 125 gallons per minute, just based on the  
24 down tube sizing. So if we look at the  
25 availability of this recharge, we can't do it,



1 we simply can't do it because we don't have  
2 enough water column, number one. Number two,  
3 the very small down tube that is in that well  
4 won't allow for anything less than 125 gallons  
5 per minute, otherwise, we start cascading water  
6 and are having hydraulic issues. So this well  
7 wouldn't be available in physical recharge  
8 capacity because water levels are so high at  
9 this site.

10 But if we could go to another example I  
11 could show you where this would work. If we go  
12 to MRO4, static water level 37.69, I won't bore  
13 you with elevations, but we have 24.45 feet of  
14 water column available in this example. This  
15 has a better injection rate, 8 gallons per  
16 minute per foot. Our sustainable recharge is  
17 there for 196 gallons per minute. The max we  
18 could ever inject at that site, by design, is  
19 1,000, the minimum is 125. So, hey, we have an  
20 actual chance to put some water in the ground,  
21 196.

22 So well-by-well you can carry this out  
23 and come up with a generally pretty good number  
24 for the well capacity of the entire ASR Phase II  
25 system. So probably the next, I thought I heard

1 a question.

2 Q. Yes. I was actually going to ask you about  
3 that. Based on aggregating the figures for the  
4 wells, what would be the maximum aggregate  
5 recharge capacity of all of those ASR Phase II  
6 recharge wells together?

7 A. Everything combined, everything open, all well  
8 tubes open 34.5ish MGD, million gallons a day.

9 Q. So if the capacity is there to inject that is  
10 what the infrastructure maximum would allow you  
11 to you inject?

12 A. Yes.

13 Q. And then if we take it the other way, based on  
14 your knowledge of the system, and the numbers  
15 that have been derived and summarized there,  
16 what is the minimum recharge capacity of all ASR  
17 Phase II recharge wells combined, if we assume  
18 the minimum infrastructure rate of all of those  
19 wells?

20 A. That would be 5.72.

21 Q. Does the proposal include an estimate of the  
22 physical recharge capacity of individual wells  
23 and the recharge system to determine eligibility  
24 for the City receiving AMCs?

25 A. Yes. I think that's what is being proposed here

1           in figure 14, there is an example of an  
2           operations program that will determine physical  
3           recharge capacity. So relative to AMCs you  
4           wouldn't get an AMC credit for anything you  
5           could physically inject, and that's the basis  
6           for that.

7       Q.    In the example shown in the exhibit, the high  
8           groundwater level shown from the observations in  
9           2016, would those limit recharge, even with all  
10          ASR Phase II wells available, to only about 819  
11          gallons per minute or 1.18 million gallons per  
12          day?

13       A.   That's correct.

14       Q.    And given the relationship between the aquifer  
15          being full, or less full, and whether there is  
16          capacity for physical recharge, if the City  
17          returned to pumping its full base right from the  
18          aquifer of 40,000 acre feet, lowering aquifer  
19          levels, would pumping down the aquifer create  
20          additional recharge capacity?

21       A.    Yes.

22       Q.    Do you have a sense from any data that you have  
23          reviewed, Mr. Clement, how long the City would  
24          have to pump the aquifer down at the 40,000 acre  
25          feet per year represented by its base rights to

1 get to the 1998 levels?

2 A. I didn't run that analysis. I mean, it would be  
3 parallel to how long it took to get there in the  
4 first place from some of those levels. Each  
5 hydrograph would have to be considered. So even  
6 if you were pumping 40,000 if you had like river  
7 flows or precipitation it would take you longer.  
8 I don't have a guess today without modeling.  
9 That's probably how I would approach it.

10 Q. There have been quite a few questions over the  
11 last couple of days about the aquifer  
12 maintenance credits and the accounting and how  
13 that works. Do you have background and  
14 knowledge of the accounting method for the AMCs?

15 A. I worked on an accounting report for the City  
16 for a number of years, so I am familiar with it.  
17 There are probably others that could probably  
18 answer, at least from the AMC perspective, how  
19 physical recharge credit accounting is done and  
20 how parallels of how AMCs can be done.

21 Q. Who would be a better witness for that?

22 A. I think Paul McCord will be, I think he is  
23 available for that, because he has done actual  
24 accounting runs and post processing of that data  
25 and could get into that a little deeper and for

1 the hearing process.

2 MR. McLEOD: Thank you. I don't have  
3 further questions for the witness.

4 THE HEARING OFFICER: Mr. Oleen.

5 MR. OLEEN: Yes, please.

6

7 CROSS EXAMINATION

8 BY MR. OLEEN:

9 Q. Mr. Clement, I think you answered my question  
10 that I had attempted to ask of a previous  
11 witness concerning figures 10 and 11 of the  
12 proposal. But I would like to make sure. So  
13 with respect to figures 10 and 11 in the  
14 proposal, do you have those?

15 A. Table 2-10?

16 Q. Figures. Just the figures for now.

17 A. Which one did you want to look at first?

18 Q. Figure 10, you created that; is that correct?

19 A. I created this figure, yes.

20 Q. Do I understand it correctly that as far as the  
21 blue percentage numbers of average optimal  
22 condition percent full, that shows by index cell  
23 the percentage fullness condition at the end of  
24 the simulated eight year 1% drought; is that  
25 correct?

1 A. Yes. That is the end of the simulated stress  
2 period. It's not the proposed level, it's the  
3 end of the simulated drought on stress period 8.

4 Q. And so, or during the course of that simulated  
5 eight year drought, it's not the case that the  
6 model projected that actual water levels needed  
7 to go down all the way to the new proposed  
8 bottom for each index cell; is that correct?

9 A. That's correct.

10 Q. Okay. But figure 11 now, am I correct in  
11 understanding that those percentages do show  
12 percent fullness, assuming that actual water  
13 levels are down in each index cell level to each  
14 of the new proposed minimum index cell levels?

15 A. That appears correct.

16 Q. Okay. And essentially figure 11, isn't it a  
17 visual display of the right most column in table  
18 2.11 as far as the percentages?

19 A. Those numbers should correlate, yes.

20 Q. Okay. And I think Mr. McLeod asked this  
21 question, and I can't recall your answer, or if  
22 you did, I think he asked what is, as far as  
23 that right most column on table 2-11, what is  
24 the average of all of those percentages for all  
25 of those 38 index cells?

1 A. Let me look to see if I have that in the table  
2 real quick. (Witness reviews documents). We  
3 may have put that in a text. I don't see it in  
4 a table. That doesn't mean it's not in the  
5 record, I just don't have that directly in front  
6 of me.

7 Q. Well, let's look at Page 2-23 of the proposal.  
8 In summary section 2.7. In the text there,  
9 there is a sentence that says: The groundwater  
10 modeling results indicate that the end of  
11 simulated 1% drought the aquifer will be  
12 approximately 86% full across the EBWF area and  
13 89% full across the entire basin storage area.  
14 That statement is describing figure 10; is that  
15 correct?

16 A. That's describing figure 10 which should  
17 correlate to the end of the stress period 8.

18 Q. But at least right now you are not aware of  
19 similar text that gives a written description of  
20 the overall average of the percentages that are  
21 shown in figure 11?

22 A. I don't recall where that, if we did it, I don't  
23 recall where it's at in the report, no.

24 Q. Based on the right most column, in table 2-11,  
25 are you there? 2-11, right most column?

1 A. What page?

2 Q. 2-25.

3 A. Okay.

4 Q. I am not going to ask you to average all of  
5 those percentages right now, but looking at them  
6 does it seem that they might average somewhere  
7 around 80%?

8 A. That was actually what I was going to say, yes,  
9 I think in the 80s would be reasonable.

10 MR. OLEEN: Nothing further. Thank  
11 you.

12 THE HEARING OFFICER: Why don't we take  
13 about a five or ten minute break.

14 (REPORTER'S NOTE: At this time,  
15 4:10 p.m., a recess was taken, after which,  
16 4:24 p.m., the following proceedings were held:)

17 THE HEARING OFFICER: Back on the  
18 record. It's 4:26. And, Mr. Stucky, I think we  
19 had moved on to you, were you next?

20 MR. STUCKY: Yes.

21

22 CROSS EXAMINATION

23 BY MR. STUCKY:

24 Q. All right. We are on the record now, and I  
25 would ask that you flip to Exhibit 27. It's



1           your CV, if you know where that is in the many  
2           books before you.

3       A.    Yes, I believe I have it here.

4       Q.    I am unclear on your CV, I am just a little  
5           unclear, where was it you got your BS in  
6           geology?

7       A.    Kansas State University.

8       Q.    And when you got your BS in geology, did that  
9           constitute courses in hydrology?

10      A.    Yes.

11      Q.    How many courses in hydrology?

12      A.    I am trying to remember, at least one or two,  
13           yes.

14      Q.    How many courses in hydro geology?

15      A.    Specifically, one course that was technically  
16           hydro geo and hydro all together, incorporated.

17      Q.    How does that work when you have a degree in  
18           geology? Can you get an emphasis in a  
19           particular area, such as hydrology or an  
20           emphasis in hydro geology if you choose to?

21      A.    It depends on the university. I mean, most  
22           geologists come out and you have a career path,  
23           it's a little different than engineering, in  
24           that you get specific emphasis, or whatever.  
25           Generally there is an environmental field, or a

1 hydro geo field or an oil field. In schooling  
2 up, in your senior or junior year, you can kind  
3 of pick those courses. At least at Kansas State  
4 University they didn't have a particular  
5 emphasis, no. It was an elective or graduate  
6 with an emphasis.

7 Q. Have you done any master level course work in  
8 hydro geology or hydrology?

9 A. No.

10 Q. After you graduated from Kansas State  
11 University, I guess I am trying to determine  
12 from your resume where it was you worked after  
13 you graduated.

14 A. So after I graduated I went to work with Kansas  
15 State University running essentially their IT  
16 support system, assisting and directing with  
17 administrative services there. The job market  
18 for geology wasn't great right out of college,  
19 for me, at least. And then I went with  
20 Groundwater Management District Number 2 so I  
21 had an opportunity to work with them for a  
22 number of years.

23 Q. How many years was it that you worked at K-State  
24 after you graduated?

25 A. I am trying it remember, it wasn't very long in

1           that official position. I worked IT during and  
2           after college maybe six to eight months maybe a  
3           year total something like that.

4       Q.    So between six to eight months and a year later  
5           you were employed then by the GMD2?

6       A.    Yes.

7       Q.    How did it go about that you received that job?  
8           Did you apply for it? Or did Mr. Boese recruit  
9           you or how did that work?

10      A.    I believe I saw a job application and applied.

11      Q.    How many years did you work for GMD2?

12      A.    I believe my services there ended in 2013,  
13           before going to work for Burns & McDonnell.

14      Q.    So that would have been what years, tell me  
15           again.

16      A.    I believe 2010 through 2013, certainly I  
17           remember 2011 and 2012. I think that's accurate  
18           off the top of my head.

19      Q.    So just a ballpark figure, roughly three years  
20           you worked for GMD2?

21      A.    I believe that's accurate.

22      Q.    Prior to working for GMD2, at least your job at  
23           Kansas State University, you didn't, when you  
24           did the IT work there you weren't doing any work  
25           in hydrology yet, is that right?

1 A. Not hydrology specific. I did assist with  
2 establishment of GIS servers, I was their  
3 network support technician for that. And I also  
4 set up the administration of GIS servers, so as  
5 much as that overlaps.

6 Q. During that time you wouldn't have run any kind  
7 of models with respect to hydrology or hydro  
8 geology or anything of that nature?

9 A. No, sir.

10 Q. When was it you first encountered running models  
11 with respect to hydrology? Was that when you  
12 started working for GMD2?

13 A. Basic introductory courses within hydro geo  
14 during college, and in hydro geology and  
15 hydrology courses you go through the basic  
16 analytical approaches of well drawdown or very  
17 basic concepts and some computer modeling in  
18 that. Really that's just introductory stuff.  
19 My first instance of getting in to any computer  
20 modeling of groundwater systems would have been  
21 with GMD2, that would be the earliest I produced  
22 anything.

23 Q. I assume that when you first started at GMD2 and  
24 you hadn't done that kind of work previously  
25 somebody would have probably had to help train

1           you; is that correct?

2       A.    Sure.  I recall going through, I believe it was  
3           GMS at the time, went through a GMS download and  
4           it was an online training course that I elected  
5           to take while I was there.

6       Q.    Would Mr. Boese have also trained you in that  
7           regard?

8       A.    I don't know that he specifically trained me.  I  
9           think he authorized the software and released  
10          the support of obtaining it.  I don't recall him  
11          training me at GMS at the time, I think that was  
12          the software.

13      Q.    So you took some online computer courses and you  
14          said that Mr. Boese got you some software.  
15          Would you have worked together on modeling while  
16          you were at GMD2 with Mr. Boese?

17      A.    Sure.  I think at the time, and this is going  
18          way back, but I think the best scenario we came  
19          up, if we had a permit issue or something like  
20          that, he would give me the inputs to say here's  
21          kind of what we are thinking, here's how we want  
22          to simulate it, might have helped to develop the  
23          rates to a nearby well, something on that order.  
24          And I would have run the software that would  
25          have been the general characterization how that

1 would have worked.

2 Q. Is it a fair characterization that you would  
3 have worked together on modeling that would  
4 occur at GMD2?

5 A. Sure. He was a manager and would be informed of  
6 what I was doing at that time, sure.

7 Q. With your experience with Mr. Boese, was he also  
8 experienced in understanding models and in  
9 modeling, was that your experience with Mr.  
10 Boese?

11 A. I am not going to speak to his credentials on  
12 modeling, or his individual, I mean, I am not  
13 going to say what he is qualified or his  
14 experience is. If you wanted to ask him  
15 certainly you will probably have the opportunity  
16 to. All I can say is that I certainly  
17 coordinated as his staff person with him on  
18 modeling.

19 Q. And I am just asking the question, from your  
20 perspective, I am just asking your opinion, did  
21 it appear to you that Mr. Boese at least  
22 understood modeling in your perception?

23 A. Could you elaborate? Modeling has a couple of  
24 different things to it, are we talking about the  
25 inputs to modeling? The outputs to modeling?

1 How the model works?

2 Q. Did Mr. Boese understand the inputs to modeling?

3 A. I think so. And we are talking about  
4 specifically groundwater modeling; is that  
5 correct?

6 Q. Groundwater modeling, yes.

7 A. The basic terms of what is aquifer permeability,  
8 for example. What is aquifer recharging? Sure,  
9 I think so. Sure.

10 Q. Did Mr. Boese understand how a model would work?

11 A. I don't know if he is familiar with the coding  
12 aspect of it, I don't know that, no.

13 Q. Aside from the coding aspects, would he have  
14 understood the basic mechanics of how a model  
15 would be run?

16 MR. McLEOD: I will object. I don't  
17 think the witness, or anyone, can testify to  
18 what Mr. Boese understood, other than Mr. Boese  
19 who, of course, can.

20 MR. STUCKY: This witness worked for  
21 three years in a close fashion on modeling, I  
22 think he can answer some of these questions.

23 MR. McLEOD: I don't think any degree  
24 of working with somebody puts one in a position  
25 to testify what they understand. It doesn't

1           arise to mind reading and resurrecting the  
2           earlier point made by counsel, this whole line  
3           of questioning is outside anything that the  
4           expert witness has to testify to and has no  
5           relationship to any of his testimony on direct.

6                        THE HEARING OFFICER: I think you  
7           should move on.

8                        MR. STUCKY: Okay.

9           BY MR. STUCKY:

10    Q.    So without any question, further questions with  
11           respect to Mr. Boese, you learned some of the  
12           basics of modeling, at least while you were  
13           employed at the GMD2, would that be a true  
14           statement?

15    A.    Sure. First year out of college, why not.

16    Q.    And during the years that you worked with GMD2,  
17           what work, with respect to modeling, did you do  
18           on the ASR Phase II project?

19    A.    I don't know that I did any modeling on ASR  
20           Phase II with respect to groundwater modeling.  
21           I think I did, maybe at that time, it would have  
22           been very to ASR Phase I would have been active,  
23           so maybe the reviewing the accounting reports  
24           would have been close to modeling anything at  
25           ASR.



1 Q. Who would have done the work on the modeling of  
2 ASR Phase II at GMD2 during that three years  
3 that you were there?

4 A. Again, I don't know that anyone did modeling, if  
5 we are talking groundwater modeling. I don't  
6 recall anyone doing groundwater modeling of ASR  
7 reactions or simulations, I don't think that  
8 occurred when I was there at staff. What I do  
9 remember is stuff like relative to ASR, review  
10 the accounting reports, inputs and outputs and  
11 general coordination with whoever the accounting  
12 person was at that time.

13 Q. After you left the GMD2, well, I will ask it  
14 this way. One other question about GMD2, not to  
15 ask about what Mr. Boese knows, but if Mr. Boese  
16 was to testify that he has knowledge of  
17 groundwater modeling and how modeling works, you  
18 would have no reason to doubt that statement by  
19 Mr. Boese; is that correct?

20 A. I don't know that I can answer that question.  
21 Again, I am not going to speak to another  
22 individual's credentials unless they provide me  
23 a resume saying here's what I worked on, or I  
24 coordinated with those specific projects that  
25 make them qualified.

1 Q. At Burns & McDonnell, who further trained you in  
2 your work in groundwater modeling?

3 A. In general, there were a couple of environmental  
4 geologists that are no longer with the company  
5 that I started with, and other than that it  
6 would have been Paul McCormick and Luca  
7 DeAngelis.

8 Q. How were you trained in the application of  
9 MODSIM?

10 A. So, I never received -- well, MODSIM not  
11 MODFLOW?

12 Q. I will talk about both. First of all, were you  
13 trained in MODSIM?

14 A. I was not trained in MODSIM, however, MODSIM is  
15 a pretty basic, and I think John described it  
16 that way, it was modified from RESNET.  
17 Essentially they are products from one another.  
18 It is a simple way of doing accounting for  
19 reservoir by getting, if you will, if you think  
20 of the Equus Beds as a reservoir, if you think  
21 of Cheney as a reservoir, because it is, and it  
22 is a decision support tool for how you take  
23 water from those resources and incorporate  
24 things like infrastructure, limitations, things  
25 of that nature. So it's really a spreadsheet

1 tool on steroids with a G Y. So it is a fancy  
2 way of saying spreadsheet accounting with tools  
3 to help make it faster for running scenarios.

4 MR. STUCKY: May I approach the  
5 witness, Your Honor?

6 THE HEARING OFFICER: Yes.

7 BY MR. STUCKY:

8 Q. I am going to hand you what has been marked, I  
9 am sorry, not been marked, if I were to proffer  
10 to you, we had a little technical difficulty  
11 over here with some water. It's very  
12 appropriate.

13 If I were to tell you that's your  
14 expert report, would you agree with that?

15 A. This appears to be my expert report, yes.

16 Q. And if you were on the first page, it indicates  
17 what you were consulted to do; is that right?

18 On the very first line.

19 A. First page?

20 Q. First page, first line.

21 A. Sure.

22 Q. What does it say you were consulted to do?

23 A. I will read it for the record. I am on number

24 A, no, letter A, consulted for Equus Beds

25 aquifer water usage consisting of a yield,

1 recharge mechanisms and accounting water  
2 resource conditions and technical tools and  
3 models.

4 Q. In the very second paragraph there is an  
5 indication of what the grounds, and the basis  
6 for your analysis, what it was based on; is that  
7 right? The next paragraph has to do with what  
8 it's grounded on?

9 A. Looking at B?

10 Q. Very next paragraph, B, I assume. Could you  
11 read that next paragraph.

12 A. Sure, I will do that. The grounds for Daniel  
13 Clement's opinions and/or knowledge of pertinent  
14 information presented in City of Wichita's  
15 response to production request of Equus Beds  
16 Groundwater Management District Number 2 and  
17 City of Wichita's responses to Intervenor's  
18 production requests, as referenced in the  
19 summaries of the respective opinions below, and  
20 in several cases excerpted and attached for  
21 convenience of reference. Is that right?

22 Q. That's correct. So is that the entire paragraph  
23 that defines under which the grounds of your  
24 opinion were based on?

25 A. Kind of a legal question that you just asked me,

1 so I will say I believe I read line B  
2 accurately.

3 Q. Are there any other grounds under which it's  
4 indicated, at least in your expert report that  
5 your opinion is based upon? And, if so, can you  
6 tell me where it explains what other grounds  
7 your expert report is based on?

8 A. I believe the entire document that is my  
9 preliminary expert report disclosure here would  
10 describe that, what you asked.

11 MR. STUCKY: May I approach the witness  
12 again?

13 THE HEARING OFFICER: Yes.

14 BY MR. STUCKY:

15 Q. Just a moment ago you testified with respect to  
16 a number of hydrographs, starting with  
17 hydrograph 1. Do you recall that testimony?

18 A. Yes.

19 Q. And it was Attachment I.

20 A. Yes.

21 Q. Could you flip with me to Attachment I and  
22 hydrograph 1.

23 A. I am there.

24 Q. If we were to look at hydrograph 1, would you  
25 agree that with respect to hydrograph 1, is that

1           that depicts an index cell; is that right? Is  
2           my terminology correct there?

3       A.    This is depicting a couple of different things.  
4           Which line do you want me to discuss?

5       Q.    Well, it says an index well hydrograph. So this  
6           is depicting a particular index well, is that  
7           correct?

8       A.    Yes. In this case we are at the location of  
9           index well 1, the blue and green line, I am  
10          trying to be thorough here, represents the  
11          elevation predicted by the model at the location  
12          of the index well within the model.

13      Q.    And index well 1, does the City have a well?

14      A.    Yes. Each index well site there should be at  
15          least, and sometimes there are other wells  
16          nearby, but I believe there is at least an upper  
17          and lower index well. So two separate  
18          monitoring wells.

19      Q.    And I should draw a distinction, in index cell  
20          1, there is at least one monitoring well, is  
21          that what your testimony is?

22      A.    Yes.

23      Q.    Does the City have an actual well where they  
24          could pump water in index cell 1?

25      A.    What kind of well? Municipal well? I am

1           assuming for the purpose of the question, to  
2           speed things up, I assume you are referring to a  
3           municipal well. And the answer is I don't know  
4           without looking at a map. I don't believe so.  
5           I don't believe there is any recovery pumping  
6           structure in 1.

7       Q.   Well, let's flip then to that map that we talked  
8           about represented on, it was Attachment I map is  
9           how it was referred. It showed, showed a  
10          graphical, it shows a spatial depiction of all  
11          of the index wells.

12       A.   The graph, or the figure that I am looking at in  
13          Attachment I, it would be the first page, after  
14          the cover page for attachment I, which has at  
15          the top labeling legend, index well name, (IW-#)  
16          and then in the lower right-hand corner,  
17          simulated drought results, recovery of ASR  
18          credits limited by existing minimum index level  
19          elevations. That figure?

20       Q.   Yes, that figure. In index well 1, are you able  
21          to look at this and determine if there is any  
22          municipal wells in index well 1?

23       A.   According to the map it does not appear that  
24          there are municipal wells, at least city  
25          municipal wells log, which would be blue

1 triangles on this particular map, and there does  
2 not appear to be any index well 1.

3 Q. Are there any wells, well, let's go back to that  
4 hydrograph. Let's go to hydrograph, so with  
5 respect to hydrograph Number 1, you would agree  
6 that this is outside an index cell where the  
7 City actually has a municipal well, is that a  
8 true statement?

9 A. That would appear to be the case.

10 Q. Let's go back to hydrograph Number 2.

11 A. I am there.

12 Q. And I am sorry, to back up on you. With respect  
13 to hydrograph Number 1, you would at least agree  
14 that in the case of your simulation, the average  
15 simulation that you performed as water levels  
16 are pumped down over a course of eight to even  
17 ten years, at least in that situation it doesn't  
18 get close to the 1993 levels; is that right?

19 A. According to the model results, yes, that's  
20 accurate.

21 Q. And, in fact, how far off from reaching those  
22 1993 levels is it in this particular hydrograph?

23 A. So, I am not going to quote exact elevations  
24 here, but it looks like the red line, which  
25 would be the 1993, lower aquifer groundwater



1 elevation, which would represent the current  
2 1993 elevations, would be the red line, and it  
3 would be roughly 1415. And it looks like the  
4 lowest we get is 1430, according to the model.  
5 So that would be a delta of 15 feet.

6 Q. So if we were just focusing graphically only on  
7 hydrograph 1, hydrograph 1 couldn't cause any  
8 concern for you as far as the fact that the City  
9 would not be able to recover recharge credits in  
10 the time of drought as it relates to the 1993  
11 level, is that a true statement?

12 A. Well, I think you would have to ask the City,  
13 the owner of the project, whether they would be  
14 concerned. That would be my answer, if you are  
15 going to use the word concern.

16 Q. But if you were advising the City, as far as  
17 whether or not the 1993 levels would be reached  
18 with respect to the index cell depicted in  
19 hydrograph 1, your answer would be no; is that  
20 correct?

21 A. Based on the model results, that would be  
22 correct.

23 Q. You next talked, well, let me back up just a  
24 moment. With respect to all of these  
25 hydrographs, did you help to generate these

1 hydrographs?

2 A. Yes.

3 Q. And did you help to do the calculations in these  
4 hydrographs?

5 A. Yes. Everything was probably, well, everything  
6 was done on an Excel spreadsheet.

7 Q. Were these hydrographs based on simulated  
8 results?

9 A. Yes. And I will be specific, that the plot of  
10 the groundwater elevation, respective to each  
11 hydrograph for IW1A and IW1C, as an example,  
12 those are plot models for the stress periods.  
13 Those are predicted results. If you want to  
14 look at things like relative percent full, those  
15 are things based on are observed, however, it  
16 does include the calculation of the groundwater  
17 elevation predicted in those. In other words,  
18 some of the things that are in here are  
19 predicted, and others are observed things like  
20 bedrock elevation, things that would be in the  
21 model, of that nature, of things that don't  
22 change, so no simulation.

23 Q. So the bed rock elevation shown as zero in  
24 hydrograph 1, that was predicted based on the  
25 model, if I understood your testimony?

1 A. So the relative percent full here, yes, it is  
2 based on the model which is based on drilling  
3 logs and things of that nature to determine  
4 bedrock elevation for this particular index  
5 cell. And then also percent full condition was  
6 based on an interpolation of observed results by  
7 USGS for predevelopment levels. And again, the  
8 relevant percent full is based on the relative  
9 condition to those predevelopment levels. And  
10 we calculate that against the saturated  
11 thickness based on the predevelopment and  
12 bedrock elevation as determined by the model.

13 Q. Just so I am clear, someone from USGS would have  
14 come up with the determination of where the  
15 bedrock is with respect to this modeling?

16 A. That's correct. The model contains bedrock  
17 elevations that were interpolated from available  
18 data, like drilling logs, that is distributed  
19 throughout the model, and that's the genesis of  
20 the bedrock within the model.

21 Q. Just so I am clear, you didn't actually look at  
22 any kind of drilling logs or any kind of  
23 baseline data of that sort to try to determine  
24 what that bedrock elevation should be; is that  
25 correct?

1 A. No. I used the values here that were within the  
2 USGS model.

3 Q. Let's move on to hydrograph 2.

4 A. I arrived at hydrograph 2.

5 Q. With respect to hydrograph 2, does hydrograph 2  
6 also depict an index cell that's outside of the  
7 pumping area of the City? And you can reference  
8 that map to answer that question.

9 A. (Witness reviews documents). It looks like  
10 hydrograph 2 does have, I don't know that it's a  
11 city pumping well, but it looks like there is at  
12 least one triangle in index cell number 2,  
13 roughly in the middle of that cell.

14 Q. Do you know if that's a Phase I or Phase II  
15 well?

16 A. I believe it is a Phase I well there.

17 Q. With respect to hydrograph number 3 that you  
18 testified to. Hydrograph number 3.

19 A. Okay.

20 Q. Can you explain in hydrograph number 3 why the  
21 water level starts below the 1993 level.

22 A. It may have just been a function of their  
23 simulated heads at that particular location. I  
24 don't have an explanation for it. I haven't  
25 gone in to detail and checked it.

1 Q. Has anyone on in your team, and when I say your  
2 team I am saying consultants with Burns &  
3 McDonnell or the City, has anyone gone in to try  
4 to determine why the water level would start at  
5 that level?

6 A. No, not that I know of, not currently, no.

7 Q. Is hydrograph number 3, is that also outside any  
8 area where there is a municipal well?

9 A. I believe the diversion wells are in that cell,  
10 but relative to city production, I am showing  
11 three triangles there, I believe those to be  
12 diversion wells and not pumping wells. I don't  
13 know that there is any municipal infrastructure  
14 there in number 3.

15 Q. When you were testifying as to hydrograph number  
16 3, you were asked the question if one could  
17 theoretically, if the City could theoretically  
18 pump water out of that particular index cell,  
19 and I think your testimony was, if the  
20 infrastructure existed, yes, you could. When  
21 you said that, what infrastructure were you  
22 referring to?

23 A. So I believe that was a hypothetical, so I  
24 assumed hypothetically there was infrastructure  
25 there, all things aside we could do it. So

1 hypothetically you could. If you put a well in  
2 the ground and want to pump water out of it, so  
3 yes.

4 Q. So in this hypothetical, the infrastructure  
5 needed would be an actual well, an actual  
6 pumping well?

7 A. That's generally how you get water out of  
8 ground, using a well, yes.

9 Q. Just so I am clear. Now, on hydrograph number  
10 4.

11 A. Okay.

12 Q. Hydrograph number 4 you would also agree that at  
13 least as the modeling relates to hydrograph  
14 number 4, the water level would never go, the  
15 actual water level that was modeled never go  
16 below the 1993 level. Is that a true statement?

17 A. Based on the red line permit level, you are  
18 talking about the 1993 level there, that would  
19 be accurate according to the model predictions.

20 Q. Without, well, do you know off the top of your  
21 head with respect to how many of these  
22 hydrographs were generated, how many of them the  
23 actual water level doesn't go below the 1993  
24 level?

25 A. I believe that was represented in one of the

1 figures we just talked about that showed the  
2 number of wells that did or didn't occur  
3 according to simulations. I assumed that was  
4 the question. Based on the model results which  
5 index cells have an occasion, somewhere within  
6 the drought model, where they showed that they  
7 dropped below the 1993 permitted levels. That  
8 would be represented in one of the figures. And  
9 I believe the figure we were just previously  
10 talking about with the map. I don't have a  
11 count, but you could count from that.

12 Q. Can you count for me and quickly answer that  
13 question? Or would that take a little bit more  
14 of your time?

15 A. (Witness reviews document). I counted twice and  
16 counted 21.

17 Q. And do you know, out of, I think this is going  
18 to be an easier question for you to answer, out  
19 of how many index cells?

20 A. There are 38 within the basin storage area.

21 Q. So over half, just so I am clear, over half,  
22 within over half of the index cells, the water  
23 level does not get below the 1993 level, is that  
24 a true statement?

25 A. Yes, statistically.

1 Q. So with respect to at least over half of those  
2 index cells, if we were to exclude just those 21  
3 index cells, and you are advising the City with  
4 regard to whether or not it's a concern that  
5 water levels could drop below the 1993 levels,  
6 with respect to those 21 cells at least, you  
7 would have to advise the City that they would  
8 not drop below the 1993 levels; is that correct?

9 A. Well, it depends on the advice I would be giving  
10 the City. Anything you do in municipal industry  
11 you always want to keep in mind future planning.  
12 So in that relative sense, I would look at  
13 places that I wouldn't anticipate putting  
14 perhaps additional infrastructure, additional  
15 ASR infrastructure, additional municipal wells  
16 and consider it in that, that circumstance.

17 So if I had an area, let's say, in the  
18 core of the well field where I had an  
19 opportunity to ASR infrastructure, or something  
20 of that nature, it might change my decision on a  
21 recommendation for or against considering  
22 whether 1993 levels would be an issue or not an  
23 issue, even with predicted models.

24 Q. Mr. Clement, I certainly can appreciate and  
25 understand the fact that future changes in



1 infrastructure and future changes in planning  
2 can change a result; but I am speaking to only  
3 what was specifically modeled and depicted in  
4 those hydrographs. As it was only modeled and  
5 depicted in those hydrographs, with respect to  
6 21 out of 38 of those index cells, the modeling  
7 would show that the actual water levels, when  
8 the City recovers recharge credits, would not  
9 drop below the 1993 levels. Is that correct?  
10 Or recovers its water rights; is that correct?

11 A. Sure. And I will try to state it relative to  
12 this specific situation. If the City took the  
13 credits in the manner that's prescribed by the  
14 current model that we use illustrated within the  
15 proposal, the water levels would not drop below  
16 the levels that are illustrated in the figure  
17 that we have just previously discussed, the 1993  
18 levels. I hope that answers your question  
19 relative to the number you put out of 21 versus  
20 the 38.

21 Q. I think it does. So with respect to 21 out of  
22 38, it would not drop below the 1993 levels?

23 A. Correct.

24 Q. You indicated in your testimony just a moment  
25 ago, that you were also referring to an

1 attachment I on the map, you said that some well  
2 areas are safe. End quote. Were you referring  
3 to the fact that with respect to 21 of those  
4 index cells they are safe from dropping below  
5 the 1993 levels? I was just unclear on what  
6 your testimony meant in that regard.

7 A. And maybe, I don't recall, maybe I said it, but  
8 I don't know that I remember saying safe. So in  
9 the instance, and I think you said your question  
10 relative to the index cell does not drop below,  
11 simply put, in my opinion I wouldn't say they  
12 were safe, they just don't drop below. If that  
13 helps clarify what I meant by safe.

14 Q. You were also indicating in your testimony  
15 something about redistributing city pumping and  
16 how that could impact the results of the  
17 modeling, I think. Was that your testimony?

18 A. Sure, yeah.

19 Q. Tell me exactly how, first of all, what is meant  
20 by redistributing of city pumping?

21 A. So right now on the model we assume that  
22 recovery of credits happen in a certain way  
23 distributed to all of the pumping wells  
24 essentially that would be available to pump  
25 recharge credits based on their ability to

1 recover 40,000 acre feet in terms of rate. So  
2 stronger pumpers, individual wells within the  
3 city, would potentially pump more recharge  
4 credits than others that are weaker wells,  
5 lesser gallons per minute. If that makes sense.

6 So there may be, just from general  
7 operations, all wells are not available 100% of  
8 the time. There isn't a well field that occurs  
9 hundred percent of the time. Lightning strikes,  
10 all sorts of things happen. They are not  
11 perfect. Also you can have a redistribution,  
12 basically a redistribution of pumping, what  
13 could occur a shift in pumping from normal  
14 operations, some wells be down, for whatever  
15 reason, and that could occur.

16 So relative to your question, and in  
17 context as to what it means for the proposal and  
18 why we said that, it would have been cells like  
19 32 or 33, which do have municipal pumping in  
20 them, but didn't necessarily drop below the  
21 levels. So if we saw a shift to additional  
22 pumping in those well sites, for whatever  
23 reason, that would be an additional thought for  
24 the shift in pumping and still be somewhat  
25 concerned about what levels mean for those

1 specific index cells.

2 Q. Did you model for any of that redistribution of  
3 pumping and play with any of the variables to  
4 account for that?

5 A. We didn't. How we handled that in the proposal  
6 was to tack on additional contingency to allow  
7 for that potential redistribution. Doesn't mean  
8 it will happen, but from a planning standpoint  
9 we wanted to say it could happen. Kind of like  
10 a weatherman predicting it is going to snow six  
11 inches tomorrow. If he says eight inches and it  
12 snows six, it is probably okay. If it snows 32  
13 and he said it would snow six, everyone is  
14 going, what the heck. So we wanted to make sure  
15 we do it right, and that's one of things we  
16 wanted to add is a contingency, not only by the  
17 City, but by ag and other interests.

18 Q. Let's move on to table 2-10 in the proposal.

19 A. Can you direct me what page that's on in the  
20 proposal?

21 Q. It looks like 2-24.

22 A. I have arrived.

23 Q. All right. Just a moment ago you were asked by  
24 Ms. Owens whether there were some errors in this  
25 particular table. And I think your answer was

1           there were at least a couple of errors; is that  
2           correct?

3       A.   That's correct.  It appears that there were  
4           clerical or typo errors, specifically in the  
5           contingency added column for IW01 and IW02.  
6           Those particular rows.

7       Q.   And IW01 in the contingency it says 20 feet.  As  
8           you are sitting there right now, do you know  
9           what the actual number should have been?

10      A.   It would have been the delta, I believe we chose  
11           existing at that site, so the difference between  
12           1413.42 and 1390.

13      Q.   What was that result?

14      A.   Let's see, it would be, it looks like 23.42 of  
15           we are on 1390.

16      Q.   And with respect to the very next line can you  
17           tell me what that Number 10 should be replaced  
18           with, if this table would have been corrected?

19      A.   It looks like 20.52.

20      Q.   So this leads me to a question, at least with  
21           respect to the first two numbers in the result  
22           that you told me there was a decimal on each of  
23           those numbers, is that, would that be a true  
24           statement?

25      A.   There are decimals on the first two columns,

1           that is correct.

2       Q.    But on these contingencies that were added, were  
3           any of those decimals included?

4       A.    Off the top of my head, I don't know.

5       Q.    At least no decimals were shown on this  
6           particular table; is that right?

7       A.    That's correct.

8       Q.    Are you aware of any other errors that exist on  
9           table 2-1?

10      A.    Not currently.

11      Q.    You were explaining a moment ago why a ten foot  
12           contingency was added on table 2-10. Can you  
13           specify to me why, for example, a ten foot  
14           contingency would be added?

15      A.    Sure. Sure. That would be a combination of the  
16           things we just talked about from potential  
17           municipal redistribution. So the pumping from  
18           the City of Wichita was redistributed to ASR,  
19           recovery happened in a different fashion than  
20           what actually occurred as predicted in the  
21           model. That would be one change. Another  
22           consideration we saw in 2011 and 2012 extensive  
23           over pumping by some agriculture, not all  
24           agriculture. And also the inclusion of  
25           multiyear flex account. So on top of the City's

1           pumping we can also see additional flexibilities  
2           that are not accounted for within at least this  
3           projected model, that could come from the other  
4           users in the aquifer. And so that is the  
5           genesis of ten feet. And it also allowed for  
6           some flexibility between the proposed conditions  
7           as respected to the model projected levels based  
8           on model output results, just not being decimal  
9           precision.

10        Q.    Awhile ago a letter from Mr. Barfield was  
11           introduced in to evidence. And if I were to  
12           tell you that Mr. Barfield referred to that ten  
13           foot contingency as a safety net, does that  
14           terminology, does that resonate with you as far  
15           as terminology that has been used to describe a  
16           contingency?

17        A.    I think that's a fair characterization of what's  
18           being implied here. We have either the existing  
19           levels or the model levels buffered by ten feet  
20           of contingency, in general; and that ten feet  
21           is, if you will, if you want to use safety net,  
22           a safety net for things we may not have thought  
23           of at this point in time. Since we are thinking  
24           for the year 2060 we want to be prepared for  
25           those things in contingency.

1 Q. At least with respect to the years 2011 and  
2 2012, were multiyear flex account popular at  
3 that time?

4 A. I believe it began with drought term permits and  
5 rolled over in to multiyear flex accounts. I  
6 think that's generally, yes, they were pretty  
7 popular. Depends on the user and how those who  
8 were in noncompliance and how they were  
9 distributed at the time, an individual's  
10 decision on how they wanted to operate their  
11 particular center pivot or their particular  
12 water right, but they were, I would say, fairly  
13 popular.

14 Q. Now, the contingencies that you put in that  
15 table, table 2-10 are relatively constant; is  
16 that right? Relatively constant contingencies?

17 A. Yes, ten is ten is ten throughout, yes.

18 Q. But with respect to if one were trying to  
19 account, for example, a MIFA, a multiyear flex  
20 account, it could create a lot more variability  
21 in that number, is that a true statement?

22 A. I don't know whether it would go up or down. It  
23 would just create too many model iterations to  
24 be like humanly, physically possible. If you  
25 figure out how many water rights are inside the



1 central well field storage area or even the  
2 basin storage area and try to decide what an  
3 individual user may or may not, you would end up  
4 with pretty much an infinite loop of never,  
5 never coming to a decision on or what levels to  
6 model. So this is a general reflection of what  
7 may happen in a reasonable number that we think  
8 is ten.

9 Q. But the City didn't try to specifically account  
10 for actual data in a multiyear flex account in  
11 the contingencies in the model; is that correct?

12 A. That was not a specific model run.

13 Q. Was there enough data, hypothetically speaking  
14 from 2011 and 2012, that if the City had wanted  
15 to account for variables such as that, the City  
16 could have done further modeling to account for  
17 those variables?

18 A. I am going to say no. Because I kind of  
19 understand what it would take to take that on,  
20 and I will go through the variables that I think  
21 would occur during that type of valuation for  
22 general characterization. You have to think of,  
23 okay, why would an individual water user and ag  
24 user apply for a multiyear flex account, it  
25 would be, number one, you need to pump your

1 water in excess of what your annual allotment  
2 is. So we would have to assume, number one,  
3 that they would want to do that and not stop  
4 pumping or perhaps collect insurance or whatever  
5 they want to do on an individual basis. That  
6 alone trying to predict what an individual would  
7 or would not do would get in to a realm of  
8 uncertainty. I wouldn't recommend doing it.

9 The nice thing that's already inside  
10 of the model results that are predicted, is we  
11 do have the affects of any drought pumping that  
12 occurred in 2011 and 2012. So it does reflect  
13 actual ag demand, or at least a response to the  
14 hydrologic conditions that were part of 2011 and  
15 2012, which were very dry. So we would expect  
16 that to continue to occur, and multiyear flex  
17 accounts would, if anything, continue to  
18 facilitate more of that.

19 Q. You testified a moment ago on table 2-1 that, in  
20 table 2-10 that in some cases you picked the  
21 existing level number. There was some sort of  
22 testimony, and I was unclear on it, where you  
23 picked a higher number for part of your  
24 analysis. Do you recall any of that testimony?

25 A. I don't remember. You will have to refresh my

1 memory if you want to ask that question.

2 Q. I will move on. I got that out of context.

3 Let's go ahead and move to table 2-11. I will  
4 walk through table 2-11 in detail. I have a  
5 number of questions about table 2-11. Just so I  
6 am clear, this 1390 number in index cell numbers  
7 1 and 2, under the proposed levels, just so I am  
8 clear with your testimony, although there were  
9 errors in the contingency, is your testimony  
10 that those numbers, with respect to the two  
11 numbers of 1390 are correct?

12 A. Those are the proposed levels for those two  
13 proposed index cells, yes.

14 Q. And also so I am clear, are you aware of any  
15 errors in this particular table?

16 A. Not that I am aware of.

17 Q. And I think what you said is that this table  
18 purports to show a saturated thickness in each  
19 one of the index cells. Is that your testimony?

20 A. Yes.

21 Q. But again, this particular saturated thickness  
22 is based on the computer modeling; is that  
23 correct?

24 A. Yes.

25 Q. And, in fact, the saturated thickness is not

1 based on any kind of actual measurements that  
2 either you, or any one of the consultants with  
3 the City took, or the City themselves took; is  
4 that correct? That was a very compound  
5 question. Let me back up.

6 This saturated thickness isn't based on  
7 any personal measurements that you took; is that  
8 right?

9 A. That's correct.

10 Q. And it's not based on any measurements that any  
11 of the consultants, that are sitting here in  
12 this room for the City took; is that correct?

13 A. That's correct.

14 Q. And it's also not based on any measurements that  
15 were taken by the City; is that correct?

16 A. So we are talking about simulation here, so you  
17 can't measure the future, so we are not, that  
18 would be impossible. So I will just  
19 characterize what the data is, and hopefully  
20 that answers the anticipated line of questioning  
21 here.

22 Just so we are clear, the proposed  
23 level remaining aquifer saturated thickness is  
24 the model average for the entirety of index well  
25 or index cell 1. That geographic boundary area

1           that is shown in figure 11 on the next page. It  
2           is that, that is the average saturated thickness  
3           of that particular cell, based on the model.  
4           And the model is based on a number of  
5           observations from drilling logs and other  
6           things, which is in the documentation of the  
7           USGS report.

8       Q.    If the City had hired consultants, for example,  
9           to have, to generate drilling logs, let's say,  
10          would that be reliable numbers to try and  
11          predict actual baseline for the bedrock and the  
12          aquifer?

13     A.    You could. If you wanted to do a hydro geologic  
14          investigation, or just perhaps query the wells  
15          in that cell, and come up with your own  
16          interpolated surface, you could do that.

17     Q.    Did any one of the City or City's consultants do  
18          that work?

19     A.    No, not that I know of.

20                       MR. STUCKY: Do you want me to proceed?  
21                       I have been told we were supposed to be out of  
22                       here at five.

23                       THE HEARING OFFICER: Oh, my goodness.  
24                       Well, I don't think you will be done in ten  
25                       minutes or even 40 minutes; is that correct?

1 MR. STUCKY: I am afraid that's a true  
2 statement.

3 THE HEARING OFFICER: So unless we want  
4 to go on indefinitely, which I guess we aren't  
5 allowed to do, we probably should just come to a  
6 close. It's an awkward place to have to cut it  
7 off, but it is what it is. So...

8 MR. STUCKY: I am just noting that the  
9 pastor is standing in the room.

10 THE HEARING OFFICER: Yes. I think you  
11 are right.

12 THE PASTOR: I am not kicking anybody  
13 out, if you need more time take what you need.  
14 But if you need a stopping point, I will tell  
15 you to get out.

16 THE HEARING OFFICER: We'll go off the  
17 record for a second.

18 (A short off-the-record discussion  
19 was held at this time.)

20 THE HEARING OFFICER: Back on the  
21 record. Unfortunately the constraints of time  
22 and travel needs require us to recess the  
23 hearing at this point. It is almost 5:25 in the  
24 evening. We'll have to have continue with Mr.  
25 Clement, and with this hearing, at a future date

1 that will be announced later.

2 So this formal phase of the hearing for  
3 the Wichita ASR Phase II Modification Request is  
4 being paused. It will be continued at future  
5 dates.

6 However, the public comment period for  
7 tomorrow will take place. That's Friday morning  
8 December 13 from 9 to 11 tomorrow morning. I  
9 will be here.

10 There will also be a subsequent public  
11 comment period later after this hearing is  
12 eventually concluded. So my announcement that  
13 the record would officially close on January 17  
14 is withdrawn. That is not the final date for  
15 the record to close any longer.

16 Is there anything else that I need to  
17 mention before we wrap up?

18 MR. OLEEN: I would like to mention to  
19 those that might be interested in learning when  
20 this will actually be continued, the quickest  
21 way will be from the DWR website on this matter.  
22 As soon as we decide on a date that will be  
23 disseminated in various forms, but the quickest  
24 it will be posted will be on the website for  
25 this matter.

1 THE HEARING OFFICER: Thank you. The  
2 updates will be on the DWR website. And thank  
3 you to everyone. And safe travels.

4  
5 (Proceedings concluded at 5:26 p.m.)  
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STATE OF KANSAS )  
                          ) ss:  
SEDGWICK COUNTY)

I, Rachelle Smith, a Certified Shorthand Reporter within and for the State of Kansas, certify that the foregoing is a full and correct transcript of all the oral evidence and oral proceedings had in this matter at the aforementioned time and place.

IN WITNESS WHEREOF, I have hereunto set my hand and official Kansas registration information at Wichita, Kansas.

Certified Court Reporter registered with the Kansas Supreme Court, No. 0864. Expires June 30th, 2020.

/S/ Rachelle Smith, CSR

**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage v*

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*Formal Hearing - Volume IV*  
*February 10, 2020*

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1 STATE OF KANSAS  
2 BEFORE THE DIVISION OF WATER RESOURCES  
3 KANSAS DEPARTMENT OF AGRICULTURE  
4  
5 In the Matter of the City )  
6 of Wichita's Phase II ) Case No.  
7 Aquifer Storage and ) 18 WATER 14014  
8 Recovery Project in Harvey )  
9 and Sedgwick Counties, )  
10 Kansas, )  
11 Pursuant to K.S.A. 82a-1901  
12 and K.A.R. 5-14-3a  
13  
14 FORMAL HEARING  
15 VOLUME IV  
16  
17 This matter came on for Formal Hearing  
18 before Constance C. Owen, Presiding Officer, at  
19 the First Mennonite Church, 427 West Fourth,  
20 Halstead, Harvey County, Kansas, commencing at  
21 9:03 a.m., on the 10th day of February, 2020.  
22  
23  
24  
25

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1 A P P E A R A N C E S  
2  
3 City of Wichita, Department of Public  
4 Works and Utilities, appears by their attorney,  
5 Brian K. McLeod, Deputy City Attorney, 435 North  
6 Main, 13th Floor, Wichita, Kansas 67202.  
7  
8 Equus Beds Groundwater Management District  
9 No. 2 appears by their attorneys, Thomas A. Adrian  
10 and David J. Stucky, Adrian & Pankratz, 301 North  
11 Main, Suite 400, Newton, Kansas 67114. Also  
12 present was Tim Boese.  
13  
14 Division of Water Resources appears by  
15 their attorneys, Aaron B. Oleen and Stephanie  
16 Murray, Kansas Department of Agriculture, 1320  
17 Research Park Drive, Manhattan Kansas 66502.  
18  
19 Intervenors appear by their attorney,  
20 Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
21 Kansas 67056.  
22  
23  
24  
25

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1 **PRESIDING OFFICER:** Okay. We are  
2 now on the record. Today is February 10,  
3 2020, and the proceedings today are a  
4 continuation of a hearing that began in  
5 December and was conducted on December 10,  
6 11, and 12, 2019. And the caption of that  
7 is State of Kansas, Before the Division of  
8 Water Resources, Kansas Department of  
9 Agriculture, in the Matter of the City of  
10 Wichita's Phase II Aquifer Storage and  
11 Recovery Project in Harvey and Sedgwick  
12 Counties, Kansas, Case Number 18 WATER  
13 14014.  
14 I'll just briefly refer to some  
15 preliminaries; we went through the complete  
16 preliminaries last time, and those are a  
17 matter of record. The formal parties are  
18 the City of Wichita, Kansas Department of  
19 Agriculture's Division of Water Resources,  
20 Equus Beds Groundwater Management District  
21 No. 2, and the following individuals who  
22 will be collectively referred to as the  
23 Intervenors, Richard Basore, Josh  
24 Carmichael, Judy Carmichael, Bill Carp,  
25 Carol Denno, Steve Jacob, Terry Jacob,

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1 Michael J. McGinn, Bradley Ott, Tracy  
2 Pribbenow, and David Wendling.  
3 As for public comments, public comments  
4 are welcome in writing. We will not have a  
5 designated time during this visit to have  
6 public comments orally, but public comments  
7 may be submitted in writing today or after  
8 today. The close of the opportunity for  
9 public comments won't begin until 30 days  
10 after this hearing is finally concluded.  
11 So we don't know yet when that date will  
12 be, but that is at some point in the  
13 future.  
14 Public comments can be handed to a DWR  
15 staff today or directly to me when we're on  
16 a break or sent to the Division of Water  
17 Resources, either as an email or in  
18 writing, snail mail, and those directions  
19 are on the DWR website.  
20 So to get started, may we have  
21 appearances, please.  
22 **MR. MCLEOD:** Brian McLeod for the  
23 City of Wichita.  
24 **MR. OLEEN:** Aaron Oleen for the  
25 Division of Water Resources.

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1 **MR. ADRIAN:** And Tom Adrian and Dave  
2 Stucky for Equus Beds Groundwater  
3 Management District.  
4 **PRESIDING OFFICER:** Thank you.  
5 **MS. WENDLING:** Tessa Wendling for  
6 the Intervenors.  
7 **PRESIDING OFFICER:** Thank you very  
8 much. And please correct me if I'm wrong,  
9 but I think where we left off was we were  
10 in the middle of Daniel Clement's  
11 testimony. Is that your recollection,  
12 Mr. McLeod?  
13 **MR. MCLEOD:** I believe Mr. Stucky  
14 was in the process still of cross-examining  
15 Mr. Clement.  
16 **PRESIDING OFFICER:** Thank you very  
17 much. Mr. Stucky, are you ready to resume?  
18 And, Mr. Clement, you are still under oath  
19 from last time. I don't know if we need a  
20 microphone moved over for counsel's  
21 questions so the court reporter can hear.  
22  
23 DANIEL CLEMENT,  
24 having been previously sworn, was  
25 examined and testified as follows:

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1 **PRESIDING OFFICER:** You may go  
2 ahead.  
3  
4 **CROSS-EXAMINATION (Cont.)**  
5 **BY MR. STUCKY:**  
6 Q. All right. Mr. Clement, last time I asked you a  
7 series of questions about your direct  
8 examination, and I'm going to try really hard  
9 not to duplicate any of those questions, but  
10 it's been a long time and I apologize if I do.  
11 But to start out, in your CV, in your resume,  
12 you note that you do water right consulting; is  
13 that correct?  
14 **A. Yes, that is correct.**  
15 Q. And so as a part of that water right consulting,  
16 you have an understanding of the nature of water  
17 rights; is that correct?  
18 **A. In general, as it applies to the State of Kansas**  
19 **for groundwater and generally surface water,**  
20 **yes.**  
21 Q. And, in part, did you learn about the nature of  
22 a water right while you were employed for the  
23 Equus Beds Groundwater Management District?  
24 **A. Sure. Straight out of college, I didn't have**  
25 **very much knowledge of what a water right is or**

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1 **how water rights worked in the State of Kansas,**  
 2 **so GMD was absolutely my introduction into that,**  
 3 **so yeah.**  
 4 Q. Okay. And last time I asked you about your  
 5 knowledge of hydrology and the training you  
 6 received at the Equus Beds, and I am not sure  
 7 that that conversation went anywhere, but I'm  
 8 going to ask you a different question. At least  
 9 as it relates to water rights and your knowledge  
 10 of water rights, did Mr. Boese help to train you  
 11 as far as what a basic understanding of water  
 12 rights is?  
 13 **A. Sure. I mean, he was the manager and I was the**  
 14 **hydrologist in that position, and never having**  
 15 **worked with Kansas water rights, yeah, he -- he**  
 16 **spent sometime making sure that I understood**  
 17 **what I was working on and understood the K.A.R.s**  
 18 **or the specific Equus Beds regulations at the**  
 19 **time that we were reviewing, sure.**  
 20 Q. So at least at that time, was it your belief  
 21 that Mr. Boese had an understanding of water  
 22 rights and their components?  
 23 **A. He is the manager of the GMD, so I would hope**  
 24 **that he understands the applicatory rules and**  
 25 **regulations that are essentially what he is**

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1 **covering and what he is taking care of as the**  
 2 **GMD manager, so I would hope so in his role.**  
 3 Q. And so just to clarify, is your answer yes then?  
 4 **A. That another individual understands --**  
 5 Q. That from your knowledge and experience with  
 6 Mr. Boese, he understood water rights and the  
 7 regulations and statutes that govern them?  
 8 **MR. MCLEOD:** I will object to that  
 9 as phrased because, again, I don't think  
 10 the witness can testify to what another  
 11 individual understands or understood.  
 12 **PRESIDING OFFICER:** Could you  
 13 rephrase the question, please.  
 14 **MR. STUCKY:** Yes.  
 15 **BY MR. STUCKY:**  
 16 Q. From your time having been employed at the Equus  
 17 Beds Groundwater Management District and based  
 18 solely on your knowledge of Mr. Boese and what  
 19 he told you and what he related to you and how  
 20 he conducted himself at the Equus Beds, is it  
 21 your belief that Mr. Boese has a understanding  
 22 of water rights and also an understanding of the  
 23 statutes and regulations that govern them?  
 24 **A. So -- so I will -- I will speak -- see if I can**  
 25 **speak this way. I mean, in the terms of the**

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1 **rules and regulations and how my role and**  
 2 **Mr. Boese's role interacted, Mr. Boese's role,**  
 3 **again, was manager and mine was hydrologist.**  
 4 **And so we work with the Division of Water**  
 5 **Resources, they would give us an application to**  
 6 **review, whether it's a change application or a**  
 7 **new application, and Mr. Boese's role and my**  
 8 **role would have been to apply the local**  
 9 **Groundwater Management District rules and**  
 10 **regulations as they were written.**  
 11 **So when I was reviewing an application or**  
 12 **when Mr. Boese would often review an**  
 13 **application, he would have the rules and**  
 14 **regulations often on one side of his desk and**  
 15 **then the application on another side of his desk**  
 16 **for an example on how we would review an**  
 17 **application.**  
 18 **So you're literally just taking, let's say,**  
 19 **for instance, spacing, will a water well or**  
 20 **proposed water well meet spacing, so a quarter**  
 21 **mile for a non-domestic well. You can simply**  
 22 **read the regulation that says it is a quarter**  
 23 **mile and apply that rule, I think, in general**  
 24 **crayon or basic terms or simple math to say does**  
 25 **this meet or does it not meet that specific**

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1 **regulation. So in those terms, yes. In -- in**  
 2 **the legal aspects of statute, outside of that,**  
 3 **I -- I won't be able to speak to that.**  
 4 Q. Okay. Now, earlier, there was discussion about  
 5 how, at least in the past, the City, and when I  
 6 say the past, we're talking about the early  
 7 1990s and that period, there was a discussion  
 8 about how the City of Wichita was off on some of  
 9 their projections, not only for water use  
 10 demands but population growth. Do you recall  
 11 some of that discussion from earlier?  
 12 **A. Sure.**  
 13 Q. Okay. And did -- did you account in your  
 14 modeling for the possibility that some of the  
 15 population trends and some of the population  
 16 models may change over time?  
 17 **A. Yes, insofar that I believe the medium growth**  
 18 **population used by the City. Me personally, I**  
 19 **did not -- I did not do the growth projections,**  
 20 **that was the City's role to provide us with the**  
 21 **numbers that they believed would be reasonable**  
 22 **demands for the year 2060. So I did not**  
 23 **personally create those numbers.**  
 24 **Do I believe those numbers to be reasonable**  
 25 **and reasonable in line with other municipal**

1 **planning, other municipal planning that I've**  
2 **done in terms of reasonable growth rates that**  
3 **you want to assume for not only growth that you**  
4 **need to have the water supply for but also**  
5 **planning in terms of infrastructure and the**  
6 **associated costs with that. You're looking at**  
7 **20 years plus, at least, for funding for some**  
8 **communities, if not beyond. So understanding**  
9 **that you want to be able to plan for not just**  
10 **20 years but 40 years would even be more common,**  
11 **if not further, for a large municipality such as**  
12 **the City of Wichita, I think that's appropriate.**  
13 **Hopefully, that answered your question.**  
14 Q. Yeah. And just to clarify, at least, as the  
15 population projections occurred, you were  
16 relying on the numbers from the City; is that  
17 correct?  
18 A. That's correct, and I -- going back to the issue  
19 of how things might have changed in 1993, just  
20 to reiterate to make sure there is an  
21 understanding there, there was a change in  
22 practice in both use made of water, the  
23 sourcing, and later on a flattening and demand,  
24 as I think Joe and maybe even Don spoke to,  
25 largely due to rates.

1 **During that period, everybody was**  
2 **projecting very, very steep inclines in water**  
3 **demand, and with the advent of things like**  
4 **water-saving toilets, more efficiencies in**  
5 **everything we do in the utility world, we have**  
6 **seen those demands -- demands decrease**  
7 **essentially. And that's not just the City of**  
8 **Wichita, water is getting more expensive**  
9 **worldwide, so that's not a one-off or a single**  
10 **occurrence.**  
11 Q. You just mentioned water efficient toilets a  
12 moment ago, would you agree that as we look to  
13 the next 10, 15, 20 years that appliances will  
14 likely become even more water efficient?  
15 A. I -- I would assume so. I'm not a water  
16 efficiency auditor, but I would hope so. I  
17 mean, that is a good thing all around, more  
18 efficiency, and especially in energy and water  
19 both, that's -- that's an excellent thing.  
20 Q. Does your modeling take into account the  
21 possibility that appliances may become even more  
22 water efficient in the future?  
23 A. No. Again, our model was essentially to take  
24 the Equus Beds groundwater model, we simulated  
25 the demands. Personally, I did not look into

1 **the demands provided by the City. I found that**  
2 **they were reasonable, but I didn't personally**  
3 **perform the projections, so I don't know the**  
4 **different percentages and things that would go**  
5 **into the genesis of that.**  
6 Q. So did you -- I think this question probably is  
7 answered, but does your model take into account  
8 changes in your -- or any of the modeling you  
9 have performed, does it take into account any  
10 changes in infrastructure that may allow for  
11 less water use by the City in the future?  
12 A. No, again, it's the fixed demands that are  
13 within the report in the table. We didn't vary  
14 anything or look at any different scenarios  
15 other than what's essentially provided in the  
16 report in terms of actual municipal demand  
17 because that was what the City provided.  
18 I know the City has done that exercise  
19 trying to understand what if such -- such as if  
20 we did beyond .35 percent reduction, what that  
21 might look like, that's a pretty aggressive goal  
22 since it's recurring, and also how the drought  
23 response plan ties into those demands. That is  
24 factored in -- in our value that we carry within  
25 the model in terms of demand.

1 **So if you can remember Scott Macey's**  
2 **testimony where the MODSIM-DSS model looks at**  
3 **what happens when water levels in Cheney drop to**  
4 **a certain extent, how does that trigger**  
5 **conservation within the City. In that essence,**  
6 **it is represented within our model because the**  
7 **City has provided us those demands which**  
8 **represent conservation and how they think the**  
9 **City will respond in the future with 2060**  
10 **demands relative to the demands of the Equus**  
11 **Beds and the ASR credits. So that would be the**  
12 **extent that those were represented within the**  
13 **model.**  
14 Q. Did you take into account other, better  
15 conservation techniques that might be used in  
16 the future in your modeling?  
17 A. I did not, I was not in charge of the  
18 projections for the City, to generate the  
19 projections to 2060, no.  
20 Q. And you may have partially answered this, but  
21 how -- as you looked at these numbers that were  
22 supplied to you by the City in this regard based  
23 on this line of questioning, how did you  
24 determine that those numbers were reasonable as  
25 you tried to employ them in your modeling?

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1 **A. I think -- I think as Scott testified earlier,**  
 2 **the original projections were done by SAIC, and**  
 3 **then later there was a review and master plan**  
 4 **performed by, I believe, Burns & McDonnell. In**  
 5 **general, the growth rates -- I've used growth**  
 6 **rates of anywhere 1 to 3 percent, and it also**  
 7 **depends on the industry that you're supporting**  
 8 **and the type of water treatment that you're**  
 9 **doing. So the City's got conventional water**  
 10 **treatment. Other municipalities might be**  
 11 **looking at things like reverse osmosis, which**  
 12 **would increase the total demand because you have**  
 13 **essentially a waste product from that. So I**  
 14 **think the demands as put forward are reasonable**  
 15 **with something that I would put together. While**  
 16 **I didn't do them, I think they are reasonable.**  
 17 Q. So at least, in part, the City's proposal, and I  
 18 think we both know what I'm talking about when I  
 19 say the proposal, correct?  
 20 **A. Yes, the report proposal that is the proposal,**  
 21 **yes.**  
 22 Q. So at least, in part, the City's proposal has to  
 23 do with projections of future water needs and  
 24 how they're going to account for those future  
 25 needs in the way of supplying water; is that

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1 correct?  
 2 **A. Sure. I -- I think -- the purpose of the**  
 3 **proposal is twofold. The first part of the**  
 4 **proposal is, number one, should the 1993 levels**  
 5 **be lowered. And the purpose of that is what is**  
 6 **a reasonable bottom for the project that can be**  
 7 **established to let the City maintain water**  
 8 **levels actually in higher condition, manage the**  
 9 **aquifer in a more responsible way that would**  
 10 **allow for meeting that 2060 demand. And so**  
 11 **we're talking about what is a reasonable bottom**  
 12 **for the ASR project that allows the City to meet**  
 13 **its drought vulnerability demands relative to**  
 14 **2060, the year 2060.**  
 15 **And the other portion of the proposal is,**  
 16 **of course, aquifer maintenance credits. So we**  
 17 **have a very full aquifer now, it is difficult to**  
 18 **put water into the ground with the existing**  
 19 **infrastructure that we have, so we have an**  
 20 **alternate method essentially of putting water**  
 21 **into the ground by saving it, by not pumping it,**  
 22 **is -- is the second part of the proposal. So**  
 23 **those would be the two elements of the proposal.**  
 24 Q. Okay. I think you mentioned drought planning  
 25 and coming up with water to -- for that drought

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1 planning in the future through this proposal,  
 2 correct?  
 3 **A. Yes.**  
 4 Q. My question is, and so at least in part as we  
 5 accumulate these credits, where the City can  
 6 accumulate aquifer maintenance credits, they're  
 7 going to be able to, under this proposal,  
 8 accumulate up to 120,000 acre-feet of credits;  
 9 is that correct?  
 10 **A. That is the number in the proposal.**  
 11 Q. So in a sense, they'll be able to acquire these  
 12 gallons in the future, is that -- is that right,  
 13 if they save up these credits?  
 14 **A. Yeah, the idea would be move water from drier --**  
 15 **or wetter years to drier years as the concept of**  
 16 **ASR. So if you're referring to the 120,000 cap,**  
 17 **that would be the cap, the maximum that you**  
 18 **could accrue in terms of ASR credits, whether**  
 19 **they be physical credits or AMCs the way the**  
 20 **proposal is written.**  
 21 Q. Setting aside the City's proposal for a second  
 22 and just based on your knowledge of Kansas water  
 23 regulations, based on your work at the Equus  
 24 Beds Groundwater Management District, is drought  
 25 planning or modeling of drought scenarios

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1 generally a basis to increase an appropriation  
 2 of water under a water right?  
 3 **A. Well, yes and no. I think it could be used for**  
 4 **flexibilities such as WCA, to understand the**  
 5 **role of multi-year flex accounts, perhaps. I**  
 6 **think modeling can serve a purpose there.**  
 7 **Modeling is served in other portions of the**  
 8 **state, solving very complex issues on water**  
 9 **rights administration. Not only within the**  
 10 **state but in between states. Do I think it**  
 11 **could be used to increase appropriations? It**  
 12 **could be on a new application, let's say, for --**  
 13 **you said to increase the City's existing**  
 14 **appropriations or any users' appropriations?**  
 15 Q. Just in general?  
 16 **A. I think you could -- if you had a model and you**  
 17 **had it available and you wanted to understand**  
 18 **the role of that new appropriation or that new**  
 19 **pumping impact, I mean, that's what a model is**  
 20 **for, sure.**  
 21 Q. And just 'cause we're trying to create a record,  
 22 can you explain what WCA is?  
 23 **A. Water conservation area.**  
 24 Q. And so from your understanding, if a new  
 25 applicant is applying for a water right and this



1 applicant is to say, you know, I've done some  
2 modeling and I believe that in 15 to 20 years  
3 from now I'm going to have some water shortages,  
4 I'm going to have some issues, and I'm going to  
5 need more water, is that a basis to, as you're  
6 applying for a water right, to seek more water  
7 from the get-go?

8 **A. So there's two aspects to that question, one is**  
9 **modeling and one is the water appropriation**  
10 **process. I don't know that they're exclusive.**  
11 **I don't know that they could be -- I mean, they**  
12 **fit nicely together.**

13 **So in the context of a municipality, if**  
14 **we're talking about a new appropriation, I mean,**  
15 **I would encourage a utility to say, look, we --**  
16 **we have a normal demand based on this and a**  
17 **drought demand based on, let's say, some**  
18 **percentage of increase, and understanding that**  
19 **we have to meet not just normal demand but**  
20 **drought demand, should that drought demand be**  
21 **built into the new appropriation request in**  
22 **terms of projections and planning, I would say**  
23 **yes. And could a model serve the purpose of,**  
24 **you know, understanding what that impact could**  
25 **be? Sure.**

1 **quantity, so a bulk quantity of water that,**  
2 **let's say, a City could consume from multiple**  
3 **resources such as Cheney or the Equus Beds or**  
4 **the local well field. And you also would**  
5 **certify or perfect for rate, what does that**  
6 **individual well, what can it physically pump?**  
7 **And so once you become certified essentially,**  
8 **that is -- that is the role of that water right**  
9 **in time for the foreseeable future.**

10 Q. So by way of example, let's say we had a farmer  
11 that applied for a water right, and we have  
12 Mr. Stroberg in the audience, let's say he  
13 applied for a new water right and he said, as  
14 he's applying for this water right, that, you  
15 know, 20 years from now, I think the markets are  
16 going to change and I'm going to want to grow  
17 rice 20 years from now and I'm going to need a  
18 lot more water; but during the five years of his  
19 projection period, it turns out he grows wheat  
20 and he needs less water. Will his total  
21 appropriation be bound by what he -- the water  
22 he actually uses in that five years of  
23 perfection?

24 **A. In theory, it would be bound by the maximum**  
25 **amount of water that he used during perfection,**

1 Q. Now, generally, in Kansas, there's a perfection  
2 period of a water right; is that true?

3 **A. Yes, that's correct.**

4 Q. And is there a perfection period both for an  
5 industrial use or, say, a municipal use or even  
6 an irrigation use, there is a perfection period,  
7 correct?

8 **A. Correct.**

9 Q. And as -- can you explain to the audience what  
10 perfection is?

11 **A. Sure, it is you are certifying that you need**  
12 **that water. The concept of prior appropriation**  
13 **is first in time, first in right, so once you**  
14 **have your spot in line and you have your piece**  
15 **of paper that says you can go forward and pump,**  
16 **whether that be for irrigation or municipality,**  
17 **you have to prove that you need the water that**  
18 **you asked for with that initial request to the**  
19 **State.**

20 **And so that is the role of perfection, you**  
21 **have to perfect both the quantity, you have to**  
22 **pump a given quantity in one year from that**  
23 **particular well, or in the case of**  
24 **municipalities, sometimes you have complex water**  
25 **rights that are intertwined for a larger net**

1 **that would be correct.**

2 Q. So in other words, if he had on one hand the  
3 water he actually used during this perfection  
4 period as he grew his wheat and on the other  
5 hand he had a projection that in 20 years from  
6 now he'd have to use double the amount of water,  
7 his modeling or his projection of what he may  
8 need 20 years from now, that would essentially  
9 be irrelevant in this hypothetical, correct? As  
10 it -- as it relates to the final appropriation  
11 of water in this -- in this water right  
12 hypothetical, right?

13 **A. In this -- yeah, in this hypothetical, if he**  
14 **perfected the right for, let's say, the value of**  
15 **wheat and pumped a certain acre-feet that was**  
16 **perfected and carried that forward, I mean, that**  
17 **would be -- the value of his water right would**  
18 **be that quantity and that rate that was**  
19 **perfected at that time.**

20 Q. So now I want to transition to a municipal water  
21 right, and I understand that instead of a  
22 five-year perfection period, we have a longer  
23 perfection period. Would you agree with that?

24 **A. Yes.**

25 Q. And so let me ask this, that if the City were to

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1 be applying for a new water right and they had  
 2 projections of their future water demands but  
 3 during their perfection period they only used X  
 4 amount of water but their projection was in the  
 5 future we'll need Y amount of water, if they  
 6 only used X during their perfection period, they  
 7 would still be bound by the number X, in fact,  
 8 what they actually used, correct?  
 9 **A. That's correct.**  
 10 Q. Earlier, we had a discussion regarding the  
 11 recharge capacity of some of the City's wells.  
 12 Do you recall that discussion?  
 13 **A. Yes.**  
 14 Q. And, in fact, and I'm just trying to refresh  
 15 some of my own knowledge, I think that you said  
 16 that there was a minimum recharge capacity of  
 17 the City's wells or infrastructure. Does that  
 18 discussion ring a bell?  
 19 **A. Sure, each one of the City's recharge wells has**  
 20 **a number of down tubes which go down the outside**  
 21 **portion of the casing and then reenter the**  
 22 **casing below water level. They are different**  
 23 **sizes, so in general, I believe the smallest is**  
 24 **maybe 1 inch, something on that magnitude, all**  
 25 **the way up to facilitate additional recharge**

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1 **rates up to maybe 1,000 gallons per minute.**  
 2 **So the minimum rate for each individual**  
 3 **well site is going to be based on that smallest**  
 4 **down tube, and that is to prevent cascading**  
 5 **in -- of water essentially in that down tube**  
 6 **itself and allow for different rates by simply**  
 7 **regulating the down tube. So if I want to**  
 8 **inject 500 gallons per minute, I don't have to**  
 9 **valve and shear head to do that; I can simply**  
 10 **open a number of down tubes to achieve roughly**  
 11 **that gallons per minute, if that makes sense.**  
 12 Q. Is there a limit as far as the amount of gallons  
 13 per minute that are needed to recharge in some  
 14 of the City's wells?  
 15 **A. Yeah, there is a break over where, let's say,**  
 16 **the smallest down tube only facilitates, for**  
 17 **example, 50 to 100 gallons per minute. If we**  
 18 **can't get that amount of water down --**  
 19 **essentially down the hole, 50 to 100 gallons per**  
 20 **minute, if that was the minimum, that's the**  
 21 **minimum operation point for that well.**  
 22 Q. So in this hypothetical, if we only had  
 23 25 gallons per minute, we wouldn't be able to  
 24 operate that recharge well, is that a true  
 25 statement, in your hypothetical?

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1 **A. Yeah, and that's, again, based off of the water**  
 2 **level, the head difference between ground**  
 3 **surface essentially and the water level that we**  
 4 **would measure. If we don't have -- if we inject**  
 5 **at a certain rate, as your example, 25 gallons**  
 6 **per minute, and that puts us to 10 foot below**  
 7 **land surface very quickly, then we wouldn't be**  
 8 **able to physically inject. So in other words,**  
 9 **if the minimum infrastructure capacity is, let's**  
 10 **say, 100 gallons per minute, then we can't put**  
 11 **in 25 gallons per minute simply because of that**  
 12 **minimum infrastructure limit.**  
 13 Q. Mr. Clement, in front of you, I think, is a  
 14 black notebook, it appears.  
 15 **A. Okay.**  
 16 Q. And at the beginning of that notebook is the  
 17 City's proposal; is that correct?  
 18 **A. I believe -- I have the proposal, yeah.**  
 19 Q. Could you flip to me -- for me to figure 14, it  
 20 would be on page 3-12 of the proposal?  
 21 **A. Okay, I have arrived.**  
 22 Q. As you just -- based on our discussion we just  
 23 had, could you use some actual numbers from  
 24 figure 14 to explain what you meant about  
 25 minimum GPM as far as the ability to utilize one

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1 of the City's wells for recharge purposes and  
 2 also the maximum?  
 3 **A. Sure. And I believe we used MR02 and MR04**  
 4 **before, so I think we'll just stick with those**  
 5 **real quick. So this is a example operations**  
 6 **plan in figure 14. The first column is the**  
 7 **recharge well name. So during my time at Burns**  
 8 **& McDonnell, one of the first projects that I**  
 9 **got to work on was being in the field working**  
 10 **with the City's well field and examining**  
 11 **recharge rates at wells. That information is**  
 12 **monitored by a supervisory control -- I forget**  
 13 **the -- the word for SCADA that I can't say right**  
 14 **now, but basically real time monitoring system**  
 15 **for water levels, and there's also an HMI output**  
 16 **in each well house.**  
 17 **And so during the commissioning of ASR**  
 18 **Phase II, I was very much in the field looking**  
 19 **at individual well capacities and also since**  
 20 **that have been accompanying the City on a number**  
 21 **of projects where we look at recharge well**  
 22 **capacity. So this is the genesis of that table**  
 23 **where we understand how the relationship between**  
 24 **groundwater levels and individual recharge well**  
 25 **capacity interrelates. So some wells -- just**

1 like some wells are better pumpers than others,  
2 some wells accept recharge better than others,  
3 and this is what that table is summarizing.  
4 This is an example of an operations plan that  
5 would determine the eligibility of aquifer  
6 maintenance credits.  
7 So let's go over MR02 and MR04, which I  
8 believe was your goal. So in the first column,  
9 that is the static groundwater level measurement  
10 in January of 2016, so this would have been from  
11 city staff going out and actually measuring the  
12 groundwater, I believe, from the top of casing.  
13 Since these are designed and permitted wells, we  
14 have elevations for top of casing, pad site,  
15 things like that, so we have an elevation to  
16 correlate to.  
17 That correlates to a maximum groundwater  
18 elevation at 10 foot below land surface, which  
19 is the next column. So we have effectively,  
20 when we recharge, we have an available water  
21 column. We do not want to operate a well to  
22 reach over 10 feet below land surface within the  
23 actual city well; that is for protection of the  
24 infrastructure at the city site. And there  
25 also, I believe, is a permit condition that

1 regulates that 10 foot to water within a  
2 specific distance, I think it's 660 feet, or  
3 maybe 600 feet, to a specific monitoring well  
4 location that's nearby. So that would be -- the  
5 water column available for recharge in this  
6 example in MR02 would be 23 feet of water column  
7 would be available for us, assuming that 10-foot  
8 depth to water cap.  
9 So we know from the observation data from  
10 this particular well through a multitude of  
11 recharge events since the commissioning of the  
12 plant in 2013, we know that this well does  
13 roughly 5 gallons per minute per foot. So if we  
14 inject 5 gallons per minute, we get roughly a  
15 foot of rise in the well column for this  
16 particular well.  
17 So if you look at the next column, that is  
18 the maximum calculated sustainable recharge rate  
19 based on that 5 gallon per minute per foot  
20 value. We know that this well, with all of the  
21 down tubes open, is rated for, at least  
22 hydraulically, 1,000 gallons per minute. The  
23 minimum well infrastructure recharge rate that  
24 we just talked about, in other words with just  
25 the smallest down tube open, would be

1 125 gallons per minute.  
2 And then that last column would be the  
3 available physical recharge capacity. Since  
4 right now with the specific injectivity, or the  
5 gallons per minute per foot, we only could  
6 inject under this example of January 2016  
7 levels, we would be talking about only being  
8 able to inject roughly 117 gallons per minute  
9 sustainably. Well, the minimum well  
10 infrastructure recharge rate, in other words  
11 with the smallest down tube open, trying to  
12 constrict things down as small as we can get  
13 just to facilitate recharge would be 125 gallons  
14 per minute. So hydraulically, it just doesn't  
15 work at this well, we just don't have enough  
16 room, and we only have 5 gallons per minute per  
17 foot of head at this specific -- specific site.  
18 Conversely, MR04 would be kind of that same  
19 scenario. I'd be happy to go through it if --  
20 if there's value to you or the hearing process  
21 if you want me to continue.  
22 Q. So just so I'm clear, in this chart where it  
23 says available physical recharge capacity and it  
24 has the number zero, what does that mean?  
25 A. That means that 117 gallons per minute is

1 essentially less than the 125 gallons per minute  
2 in the -- in the second-to-last column. In  
3 other words, we can't inject because  
4 hydraulically we can't -- we cannot inject 117  
5 gallons per minute, it will create cascading  
6 issues for us. It's just simply the minimum  
7 down tube size for this particular well.  
8 Q. So let's talk about MR06, you just mentioned  
9 that one. Well, actually, let's -- let's talk  
10 about MR06. You talked about MR04 and MR02.  
11 With respect to MR06, it looks like the minimum  
12 infrastructure required is 150 GPM; is that  
13 right?  
14 A. Yes.  
15 Q. And the maximum is 1,200; is that right?  
16 A. That's correct.  
17 Q. And in that case, the available physical  
18 recharge it has is 162 GPM; is that right?  
19 A. That's correct.  
20 Q. So now let's look at MR0 -- or, I'm sorry, MR55.  
21 It's about one, two, three, four, five, six,  
22 seven up from the bottom of that table.  
23 A. Okay.  
24 Q. With respect to MR55, it has the same maximum  
25 well infrastructure recharge rate which is 1,200

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1 GPM, correct?  
 2 **A. Yes.**  
 3 Q. But the minimum, which is 225 GPM, is actually  
 4 75 GPM higher than MR06. Is that a true  
 5 statement?  
 6 **A. It has -- yeah, it's 225 off of 150, yeah.**  
 7 Q. So 75 GPM higher. So let's just talk about a  
 8 comparison conceptually of these two wells.  
 9 Let's say that the available GPM for recharge  
 10 purposes was 150 GPM. You would be able to  
 11 operate MR06 under that scenario, correct?  
 12 **A. Yeah, that would be compatible with the minimum**  
 13 **down tube size, yeah.**  
 14 Q. But with respect to MR55, you wouldn't be able  
 15 to operate MR55 under that scenario, true?  
 16 **A. Let me look here. Yeah, I mean it looks like**  
 17 **the math says roughly 33 gallons per minute is**  
 18 **available recharge capacity at the site, so 33**  
 19 **gallons per minute is not going to be compatible**  
 20 **with a minimum -- minimum recharge rate of 225.**  
 21 Q. Would it be possible with respect to MR55, based  
 22 on your knowledge of hydrology and hydrogeology,  
 23 would it be possible to change the  
 24 infrastructure of MR55 so injection could occur  
 25 at a lower minimum GPM?

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1 **A. No, I don't think -- number one, at these rates,**  
 2 **I wouldn't recommend it, the cost benefit,**  
 3 **frankly, at 30 gallons per minute. When we talk**  
 4 **about the role and how ASR wells operate, not**  
 5 **just the City but anyone's ASR wells, general**  
 6 **practice is to after a certain point of**  
 7 **recharging you have to redevelop the well. You**  
 8 **have water moving in two directions, so that**  
 9 **keeps the well clean.**  
 10 So if we're talking about putting in  
 11 30 gallons per minute in this instance, it would  
 12 not behoove the City, it would not pay  
 13 dividends, it would not be in the interest of  
 14 the City, or frankly anyone else at this point,  
 15 to try and squeak 30 gallons per minute into  
 16 this particular well to simply redevelop it at a  
 17 later time, it -- generally, the redevelopment  
 18 rates are high so we can get the velocities up  
 19 at 1200 gallons per minute just to redevelop any  
 20 fines or anything that may have taken part  
 21 inside the well. So I wouldn't advise it, if  
 22 you're asking me as a professional in this  
 23 capacity, would I advise the City to do that? I  
 24 would not.  
 25 Q. So from a cost benefit perspective, it doesn't

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1 make sense, but at least as far as whether it's  
 2 possible to change the infrastructure to  
 3 recharge at a lower GPM, it is at least  
 4 possible. Is that a true statement?  
 5 **A. I could make you an ASR well that we could**  
 6 **literally go over and recharge at an eyedropper**  
 7 **rate, doesn't mean that it's a good idea.**  
 8 Q. Okay. Do you have any knowledge of why the  
 9 infrastructure or the wells were -- were built  
 10 with differing minimum recharge rates?  
 11 **A. Yeah, sure, every -- every well is different.**  
 12 **Every well is -- in general, the better pumpers**  
 13 **are going to be better recharged, that's just a**  
 14 **function of aquifer transmissivity. So it's --**  
 15 **whether the aquifer can accept, excuse me, water**  
 16 **is generally based on two things. Number one is**  
 17 **permeability of the formation, and number two is**  
 18 **the shear available storage at that site.**  
 19 When you recharge, there is a mounding  
 20 effect of water at that particular well. So in  
 21 the instance where we have, let's say, 20 foot  
 22 depth to water, that would not present as much  
 23 opportunity to recharge as, let's say, 15 foot  
 24 to water in that same environment, in that same  
 25 hydrogeologic environment.

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1 Q. With respect to this chart, which has to do with  
 2 2016 Wichita groundwater level measurements,  
 3 under this chart, would any water have been  
 4 injected into these wells in 2016?  
 5 **A. You know, I'm looking here. Over in the far**  
 6 **right-hand column would be -- should be the**  
 7 **answer to your question. Roughly, if you look**  
 8 **at the bounds of the actual infrastructure for**  
 9 **the entirety of the Phase II wells, we would be**  
 10 **talking about roughly 819 gallons per minute**  
 11 **that the City could feasibly put into the**  
 12 **ground, or 1.18 million gallons per day.**  
 13 Q. Could they actually do that, to your knowledge?  
 14 **A. Sure.**  
 15 Q. Under the proposal that the City has submitted,  
 16 would they be able to do that?  
 17 **A. No, I believe we proposed a minimum of 5 MGD,**  
 18 **that is for operational considerations. Again,**  
 19 **we're talking about trying to squeak -- while**  
 20 **196 gallons per minute sounds like a lot, in**  
 21 **context of trying to build physical recharge**  
 22 **credits for, again, later water supply, it's**  
 23 **very difficult to do in the context of even**  
 24 **having, in this case, this many wells available.**  
 25 The plant, at least ASR Phase II, that

1 plant operates at either 30 million gallons a  
2 day or 15 million gallons a day. So talking  
3 about sending 1.18 million gallons per day to  
4 specific wells, in this case at 196 or  
5 162 gallons per minute, if we were just to try  
6 and flow route that minimum, in this case 1.18  
7 or even the minimum that was proposed at roughly  
8 5 million gallons a day, around the well fields,  
9 there's piping within the well field and so  
10 producing 15 million gallons a day, even if 10  
11 million of that was sent to the City, let's say  
12 in this instance, and 5 million of that we  
13 wanted to recharge, it takes a very long time  
14 for that to go around the ASR piping. There's  
15 just physical minimums as a function of the  
16 infrastructure that -- where logically it's  
17 extremely difficult to put it in the ground and  
18 doesn't behoove the City, or frankly anyone, to  
19 try and simply slow drip the -- slow drip the  
20 water into the -- into the ground so ...  
21 Q. So under the City's proposal, if we're less than  
22 that 5 MGD, under that scenario, it's at least  
23 possible that there could be recharge capacity  
24 in the aquifer, but the City would then not  
25 recharge if it's less than that; is that true?

1 is -- this is the sustainable physical recharge  
2 capacity based on our knowledge of how each well  
3 operates, how it responds when you inject, in  
4 this case, at 2016 levels. We had looked at  
5 multiple years to come up with the sustainable  
6 specific injectivity rates. So this is not the  
7 accounting of water in 2016, this is simply  
8 representing what we think the sustainable rate  
9 for 2016 would be based on our water level  
10 measurements and how individual wells behave.  
11 You can recharge, let's say, theoretically,  
12 we could recharge 1,000 gallons per minute down  
13 this well, as example MR02, for a very, very  
14 short period of time. But the goal of the ASR  
15 project and in operation of the water treatment  
16 plant is to operate over as much time period as  
17 we can to the benefit of not only the City but  
18 others. So when the plant's running, we need to  
19 have compatible recharge capacity to essentially  
20 put it in the ground, if we're going to put it  
21 in the ground, and that's what this table is  
22 representing, that sustainable value, not  
23 necessarily the peak value or the value that was  
24 represented in the 2016 ASR accounting report.  
25 Q. So from this table alone, you can't tell the

1 **A. Operationally, I think that's -- that's what we**  
2 **discussed, we looked at what we think we could**  
3 **physically do under high conditions even. And**  
4 **that pairs up very nicely with the**  
5 **second-to-the-left column, the minimum well**  
6 **infrastructure recharge rate, that's essentially**  
7 **pretty close to that minimum infrastructure**  
8 **rate. So that's essentially the genesis of the**  
9 **5 MGD, if you will.**  
10 Q. So going back to figure 14, which is still in  
11 front of you, would it at least be a true  
12 statement that at least with respect to recharge  
13 wells in 2016 the vast majority of them did not  
14 inject any water into the aquifer? Is that a  
15 true statement?  
16 **A. I won't speak to what actually occurred in 2016,**  
17 **I will just tell you that these are the**  
18 **sustainable values that we would predict based**  
19 **on how each well individually behaves. That is**  
20 **what figure 14 is representing.**  
21 Q. Well, just a moment ago you told me that if we  
22 looked at the far right column of this table it  
23 tells us the amount of water that actually went  
24 into the aquifer in 2016; is that true?  
25 **A. No, this is not the accounting report. This**

1 amount of these wells that actually injected  
2 water into the aquifer in 2016?  
3 **A. No, that would be as part of the 2016 accounting**  
4 **report.**  
5 Q. What exactly is a recharge basin?  
6 **A. A recharge basin is effectively a excavation**  
7 **into the ground where we have permeable**  
8 **formations ideally underneath it that**  
9 **facilitates dumping of water into that basin.**  
10 **That water then percolates downward into the**  
11 **aquifer, which acts like, if you will, a large**  
12 **diameter well, if you want to think of it that**  
13 **way. It is an opportunity to recharge in a**  
14 **different manner other than wells; it just**  
15 **facilitates it using a ground surface method in**  
16 **infiltration rather than using a specific well**  
17 **in the ground.**  
18 Q. So in the past, has the City used recharge  
19 basins to help to recharge the aquifer?  
20 **A. Yes.**  
21 Q. And based on your knowledge of having worked for  
22 the Equus Beds Groundwater Management District  
23 and also Burns & McDonnell, is it your knowledge  
24 that the majority of the recharge that has  
25 occurred based on the City's efforts, has the

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1 majority of it occurred because of recharge  
 2 basins?  
 3 **A. Yes, and that is a function of high water**  
 4 **levels, again. The -- even since 2013 in**  
 5 **commissioning the plant and forward, we have**  
 6 **seen unprecedented water level recoveries to**  
 7 **near predevelopment conditions, which means that**  
 8 **there's just very little space in the aquifer.**  
 9 **Recharge basins offer generally more**  
 10 **capacity than individual wells. The two**  
 11 **locations that are effective right now for**  
 12 **recharge basin capacity are RB2 and recharge**  
 13 **basin 36, with the majority of the water**  
 14 **produced currently - and this is jogging my**  
 15 **memory from the accounting reports - but, in**  
 16 **general, in discussions with the City and my**  
 17 **knowledge of those ASR accounting reports, the**  
 18 **majority of the recharge has been going to our**  
 19 **recharge basin 36, which is one of those basins.**  
 20 Q. Could the City, from a conceptual standpoint,  
 21 could they add more recharge basins in the  
 22 future?  
 23 **A. You could.**  
 24 Q. Is there a reason that the City is precluded  
 25 from adding recharge basins?

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1 **A. I don't know of anything prohibiting it.**  
 2 Q. So I guess my question is if recharge basins  
 3 have accounted for the majority of the actual  
 4 recharge in the aquifer, as you're sitting here  
 5 today, do you have any knowledge why the City  
 6 hasn't built more recharge basins?  
 7 **A. Well, recharge basins have very similar behavior**  
 8 **to recharge wells, and their capacity is also**  
 9 **based on water levels. You do get a mounding**  
 10 **effect when you recharge, so not only downward**  
 11 **percolation but there is an outward push, pardon**  
 12 **me. So recharge capacity is also based on water**  
 13 **level, so that is -- that is the same between**  
 14 **recharge basins and wells. So when the**  
 15 **aquifer's in this case or this instance, in this**  
 16 **discussion, full at a location, a recharge basin**  
 17 **is perhaps no more effective than a well.**  
 18 **They can be somewhat land intensive, and**  
 19 **they are also more so site specific than wells.**  
 20 **Siting of recharge basins can be very picky.**  
 21 **You have to have not only the surface**  
 22 **compatibility, you have to have the soils at the**  
 23 **surface that are compatible with it but also**  
 24 **directly underneath it. You have to have the**  
 25 **ability of that water to move not only down but**

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1 **laterally; and in instances where we have, let's**  
 2 **say, clay at maybe 15 or 20 feet, that can**  
 3 **actually impede recharge capacity.**  
 4 **So they are not just a simply go out, dig a**  
 5 **hole, and put water in it and it is that simple,**  
 6 **from that standpoint. I hope that kind of**  
 7 **classifies how recharge basins work and their**  
 8 **infeasibility.**  
 9 Q. It does. And you mentioned a number of  
 10 variables that must be in place for a recharge  
 11 basin to work effectively, and I'm not going to  
 12 try and pretend to summarize all those variables  
 13 again, but if we were to assume just arguendo  
 14 that conditions are favorable and one could  
 15 construct a recharge basin, if the City were to  
 16 build additional recharge basins in the future,  
 17 that could potentially increase their recharge  
 18 capacity. Is that a true statement?  
 19 **A. Sure.**  
 20 Q. And same question with respect to additional  
 21 recharge wells, if the conditions, all the  
 22 hydrological conditions were favorable and the  
 23 City built more recharge wells in the future,  
 24 could that also increase their recharge capacity  
 25 of the aquifer?

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1 **A. Sure. I wouldn't recommend it at this interval.**  
 2 **Again, we've got 34.52 million gallons a day**  
 3 **or -- yeah, 34.5 million gallons a day of**  
 4 **recharge capacity right now. We've got wells**  
 5 **that are sitting idle in terms of recharge**  
 6 **capacity just because we can't physically**  
 7 **recharge. You could do it, I wouldn't recommend**  
 8 **it, but you could do it.**  
 9 Q. I guess the question I then have for you, and  
 10 maybe you just answered this 'cause it's based  
 11 on your recommendation maybe that you wouldn't  
 12 do it, but was it modeled in the modeling that  
 13 you and your group as consultants did and the  
 14 modeling done by the City, was it included in  
 15 your model the prospect that there could be more  
 16 recharge basins or recharge wells added in the  
 17 future, was that taken into account?  
 18 **A. Well, so the way -- we're going to be referring**  
 19 **to the Equus Beds groundwater model in this**  
 20 **instance and then the drought model runs, I'm**  
 21 **assuming that's what you're referring to. It**  
 22 **was not accounted for insofar that we basically**  
 23 **assumed that the credits existed, we didn't look**  
 24 **at how they were created.**  
 25 **We ran the model with a starting head**

1 condition that said, okay, the credits are  
2 already essentially in existence and then  
3 recovered them in the manner that's described in  
4 the report, we distributed pumping to city  
5 wells, so there wasn't a distribution based on  
6 recharge basins or wells or anything of that  
7 nature.

8 We -- we basically assumed a uniform  
9 distribution relative to pumping capacity of the  
10 wells. In other words, the stronger pumping  
11 wells probably had greater recharge to build  
12 those credits. That would be the only  
13 correlation in terms of how recharge credit  
14 accrual would have been distributed in the  
15 model. We didn't actually do that. We just  
16 assumed a starting condition, and how are we  
17 going to recover credits was the focus of the  
18 model, if that makes sense.

19 Q. Yes, it does. And so I think just to answer the  
20 question in a simple context, I mean, you can't  
21 conceivably account for every variable when you  
22 model, I understand it's a model, it's a best  
23 guess of what will occur, so -- but if one were  
24 to include -- or if the City were to build a  
25 bunch of additional recharge basins in the

1 couldn't recover them.

2 So based on that, I don't -- I don't see a  
3 significant delta in the answer relative to the  
4 demands or how water level changes would happen  
5 within the model over time because I just don't  
6 see that much redistribution of actual credits  
7 and where they occur.

8 Q. Under what circumstances would a recharge basin  
9 be more effective for recharging the aquifer  
10 over a recharge well?

11 A. If you can think of it this way, it's just a  
12 large diameter well. I mean, it just, it offers  
13 more capacity at a specific site if you have  
14 compatible soils. That's the easiest way to  
15 explain it, I think, without getting into  
16 extreme detail.

17 Q. So in a simplistic sense, is that the reason  
18 that the recharge basins have accounted for more  
19 recharge to the aquifer than the wells?

20 A. No, in -- in this case, in this instance, if  
21 we're talking about what's been recharged to  
22 date, simply put, there's not enough room with  
23 the existing wells. The wells as shown in  
24 figure 14, in this example in 2016, a lot of  
25 them simply couldn't operate. We had water

1 future, would that change some of the modeling  
2 in the future?

3 A. I don't think it would change this particular  
4 instance of the model significantly because we  
5 would assume, I mean, roughly the same  
6 distribution of recharge credit recovery, which  
7 is what steers the water level changes in the  
8 model. So I don't think there would be a  
9 significant difference there.

10 Q. There wouldn't be, in your mind, a significant  
11 difference, but there would at least be some  
12 difference; is that true?

13 A. If we knew that basins or other recharge  
14 infrastructure would be concentrated in, let's  
15 say, the core of the well field or the north end  
16 of the well field for a particular purpose,  
17 sure, we might have accounted for that. I don't  
18 think that's going to be the instance.

19 I think in any case the City would  
20 logically produce credits from where they would  
21 be accrued, and in order to recover them, you're  
22 going to produce them strategically in, very  
23 likely, the core of the well field where your  
24 strongest pumping wells are. There would be no  
25 purpose in establishing credits where you

1 levels that were too high to actually physically  
2 inject water. So we still want to operate.  
3 Right now the City does not get any credit for  
4 anything that's not put in the ground. So the  
5 logical place to put that is where we have  
6 capacity. One of the only locations left with  
7 any significant capacity is recharge basin 36  
8 and to some extent recharge basin 2. But even  
9 in recent history, we've seen water levels at  
10 recharge basin 2 be extremely high and not  
11 facilitate recharge.

12 Q. Let's move on to some of the specifics of the  
13 modeling that you performed. First of all, with  
14 respect to the drought simulation and your  
15 involvement in that drought simulation, I note  
16 that in your expert report you mention some of  
17 the work done on the drought simulation, but I  
18 assume that you would defer more to  
19 Mr. Winchester as far as why a certain drought  
20 was simulated. Is that a true statement?

21 A. That's correct, the -- the policy of drought and  
22 the PDSI work and the genesis of what is a  
23 1 percent and why, that would have been done by  
24 Mr. Winchester, and the demands that are  
25 associated with that would have come from the

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1 **City, yes.**  
 2 Q. So if I were to ask you why didn't the City  
 3 model different types of drought scenarios, in  
 4 other words, 1 percent or 2 percent -- versus a  
 5 2 percent drought scenario, would you be the  
 6 best to answer those questions, or would those  
 7 questions be best answered by Mr. Winchester?  
 8 **A. Either Mr. Winchester or really that's a policy**  
 9 **question, so city council has decided to plan**  
 10 **for that specific 1 percent. The reason we ran**  
 11 **with the numbers we did is because those numbers**  
 12 **were supplied from the City as policy, we are**  
 13 **going to plan for a 1 percent drought. Burns &**  
 14 **McDonnell, we need to understand what the role**  
 15 **of this is to our ASR project, how does this**  
 16 **relate to 1993 levels, and do we have an**  
 17 **opportunity with AMCs to maintain the aquifer in**  
 18 **a fuller condition, understanding that its role**  
 19 **is going to be 1 percent drought protection. So**  
 20 **I hope that clarifies your question in terms of**  
 21 **where the 1 percent came from.**  
 22 Q. That does -- that does help. Did the City  
 23 account for -- well, first of all, what is a  
 24 MYFA?  
 25 **A. Multi-year flex account.**

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1 Q. Did the City account for MYFAs, or multi-year  
 2 flex accounts, in the modeling that was  
 3 performed?  
 4 **A. Yes. The City did not, I did insofar as the**  
 5 **demands from agricultural irrigation that are**  
 6 **within the model, which represent actual**  
 7 **demands, reported values to DWR in the year 2011**  
 8 **and 2012 that are repeated throughout the model.**  
 9 **Those values are based on actual metered**  
 10 **reported values.**  
 11 **So so far as during the drought of 2011 and**  
 12 **2012, we had essentially overpumping in some**  
 13 **instances, not all instances of water rights,**  
 14 **where drought term permits were available as one**  
 15 **method, which eventually rolled into multi-year**  
 16 **flex accounts. So, basically, if we assume that**  
 17 **the water applied by ag was to grow crops out of**  
 18 **necessity, not waste of water but actual there**  
 19 **was a demand, we needed to keep, as an example,**  
 20 **the center pivot on just to meet the**  
 21 **evapotranspiration demands of that day or that**  
 22 **week and overpumped in that instance, multi-year**  
 23 **flex accounts would be very similar to, in my**  
 24 **opinion, what happened during 2011 and 2012. So**  
 25 **we would see increased demands during a period**

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1 **of drought. And 2011 and 2012, we certainly saw**  
 2 **that in the amount of typical agricultural**  
 3 **pumping.**  
 4 **So from the standpoint of our multi-year**  
 5 **flex accounts and their response and the ability**  
 6 **to overpump, let's say, an individual ag water**  
 7 **right during drought, is that represented in the**  
 8 **model? Yes, we think so relative to the years**  
 9 **2011 and 2012 that are in the model.**  
 10 Q. Well, let me ask you, how many year window is  
 11 involved in a multi-year flex account?  
 12 **A. There is a total of five in the current version**  
 13 **of the multi-year flex account, to my**  
 14 **understanding.**  
 15 Q. So in the iteration of 2011 and 2012, that would  
 16 have been just an iteration of two out of those  
 17 five years of the multi-year flex account. Is  
 18 that a true statement?  
 19 **A. Sure.**  
 20 Q. And so in other words, when we multiply those  
 21 two years over the course of eight years, are  
 22 we -- are we properly accounting for the other  
 23 three years of what would occur during a  
 24 multi-year flex account?  
 25 **A. I believe this goes back to some of my answers**

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1 **previously where I can't predict what an**  
 2 **individual user may or may not do, that gets**  
 3 **very, very complicated. However, in general, I**  
 4 **think if you look at past irrigation trends,**  
 5 **which I did, as part of the justification to**  
 6 **make sure we had a gut check on things like**  
 7 **multi-year flex accounts or drought terms, there**  
 8 **was initially some concern by GMD2 and DWR that**  
 9 **said, well, there was a lot of pumping in 2011**  
 10 **and 2012. Of course there was, there was**  
 11 **extreme drought.**  
 12 **But we also looked at your authorized**  
 13 **quantity for both the basin storage area and**  
 14 **central well field area to say, okay, well, what**  
 15 **does this look like in terms of what's actually**  
 16 **authorized? And in both 2011 and 2012, while**  
 17 **some people overpumped, others had very, very**  
 18 **large water rights established, very, very old**  
 19 **water rights relative to the appropriations that**  
 20 **were done, so things that were established**  
 21 **during, let's say, flood, with higher**  
 22 **quantities, so some of those irrigators didn't**  
 23 **overpump necessarily.**  
 24 **But in total, in net, if you look at 2011**  
 25 **and 2012, the total amount pumped, even with the**



1 high demands that were -- occurred during 2011  
2 and 2012, the net value that was pumped was  
3 still under the authorized quantity within, I  
4 believe, the central well field storage area.

5 So, yes, very, very much higher but not --  
6 not over the net authorized quantity; in other  
7 words, not everybody overpumped. And with an  
8 extreme drought like 2011 and 2012, which were  
9 very, very, very much extreme drought, that gave  
10 me the confidence to say essentially that was a  
11 legitimate agricultural response within the  
12 model, and I'm comfortable saying that, you  
13 know, those are reasonable responses by  
14 agriculture to represent within the model in  
15 terms of a future projection on how ag might  
16 respond to that particular drought event.

17 Q. Well, let me ask you this: During a five-year  
18 multi-year flex account, let's say that a user  
19 overpumped their water right during the first  
20 two years, just assume that with me for a  
21 moment, at least in one of those remaining three  
22 years, they would have to pump less than their  
23 authorized quantity. Is that a true statement?

24 A. Sure.

25 Q. And my question is how was the fact that if

1 representing an actual agricultural response.

2 Q. You mentioned drought term permits, let's talk  
3 about those just for a moment. Drought term  
4 permits were in place in 2011 and 2012, is that  
5 a true statement?

6 A. I believe it was -- the concept was enacted,  
7 yeah, in the later part of 2011, maybe October  
8 or something like that, where the State came up  
9 with a solution to say, look, there was a lot of  
10 people that overpumped, a lot of people that  
11 gained very quick knowledge about what their  
12 water right was and wasn't, and so how to deal  
13 with that, how to make sure that we could try  
14 and at least make that somewhat net neutral. So  
15 that would have been the genesis of the drought  
16 term permits.

17 Q. Are drought term permits still in effect today?

18 A. Not that I recall. I mean, the closest  
19 compatible thing to that would be the multi-year  
20 flex account.

21 Q. So ask you to flip to table 26, which is on  
22 page 2-12 of the City's proposal.

23 A. Okay.

24 Q. And this table reflects net irrigation values,  
25 is that a true statement?

1 someone's enrolled in a multi-year flex account  
2 and they overpumped during 2011 and 2012 and  
3 then in those future years of the drought they'd  
4 have to pump less, how was that accounted for in  
5 the City's modeling?

6 A. Sure, the drought term permits, some of them had  
7 to essentially pay it back, you could borrow  
8 from the next year. Some people simply took a  
9 notice of noncompliance. But, again, it was  
10 under the net value for authorized quantity. In  
11 other words, yes, pumping was high, but it was  
12 not exceedingly high so far that it exceeded the  
13 net value within the central well field storage  
14 area in terms of what was authorized. I believe  
15 that number is roughly 14,000 acre-feet.

16 This is going back to numbers I crunched a  
17 long time back, but what gives me the confidence  
18 to say that the model is okay in terms of  
19 predicting what ag's response will be is that we  
20 are still slightly under that net value. So we  
21 didn't go to, let's say, 20,000 acre-feet of ag  
22 pumping in 2011 and 2012 and what we would  
23 anticipate in terms of the authorized cap being  
24 roughly 14,000, if that make sense. So I'm  
25 comfortable with the numbers that were in there

1 A. Correct.

2 Q. If drought term permits are no longer in effect  
3 today, would some of these net irrigation values  
4 look differently today based on that fact?

5 A. I don't think so. If we were -- if we were to  
6 look at the same -- same values for -- let's say  
7 2011 happened tomorrow, say the drought of 2011  
8 happened tomorrow, I don't know with the  
9 multi-year flex account program being enacted  
10 and the severity of that drought that those  
11 numbers would be any different. I mean, we --  
12 we would like to assume that that water was  
13 applied in a manner that resulted in actual  
14 yield of crops, not simply pumping to pump or  
15 finish for another reason. I mean, that was an  
16 actual demand, so that is a reported value to  
17 the Division of Water Resources. I don't know  
18 that it would be that different.

19 Another approach, you could look at just  
20 simply what is the net irrigation requirement  
21 given the evapotranspiration demands of that  
22 specific year, but that's a hypothetical. Here  
23 we have actual observed pumping to the drought  
24 of what I consider an extreme drought of record  
25 for this area where ag responded accordingly,

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1 and that's represented within the model, and I  
 2 think it is a legitimate value to use.  
 3 With respect to planning for the future, I  
 4 mean, in a very short time period, and, again,  
 5 I've been doing water rights consulting since  
 6 obviously with GMD, we've seen water use  
 7 programs expand in their flexibility. So first  
 8 drought term permits, which was unprecedented,  
 9 the ability to borrow water from another year,  
 10 universally essentially across the state, if  
 11 needed, and that followed with multi-year flex  
 12 accounts, which allows for moving of water  
 13 between wet years and dry years, and so I  
 14 anticipate from a planning standpoint, if  
 15 anything, we may see ag demand and potentially  
 16 demand on the aquifer go up as those programs  
 17 are -- continue to be implemented. It's simply  
 18 flexibility for moving years of wet to dry.  
 19 Q. So with respect to a drought term permit, is it  
 20 true that there's usually one year of high use  
 21 and one year of less use of water under a  
 22 drought term permit?  
 23 A. I -- I don't have that data in front of me. Not  
 24 necessarily. The user could have overpumped by  
 25 10 acre-feet and just didn't want to take the

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1 notice of noncompliance relative to his water  
 2 right of 200 acre-feet. I don't have that data  
 3 in front of me, so I wouldn't want to speculate  
 4 without going through it.  
 5 Q. So if I were to characterize how a drought term  
 6 permit works in that fashion, as you're sitting  
 7 here today, you wouldn't have the knowledge or  
 8 expertise to either agree or disagree with me in  
 9 that regard, is that what you're saying?  
 10 A. Could you -- could you ask the question one more  
 11 time?  
 12 Q. The question is with respect to a drought term  
 13 permit, I mean, in just a very basic sense,  
 14 isn't it if one uses a bunch of water in year  
 15 one, in year two, they would have to use less  
 16 water under a -- if they exceed in year one,  
 17 they'd have to use less in year two. Is that a  
 18 true statement?  
 19 A. That -- that was generally the concept with  
 20 the -- the additional advent of the multi-year  
 21 flex account where you had the opportunity to  
 22 also roll into a multi-year flex account. There  
 23 was a lot of discussion during that time also  
 24 about forgiveness, just blatant, let's --  
 25 let's -- that was a really tough year in

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1 history, how are we going to deal with it, how  
 2 are we going to deal with the economics of that?  
 3 So I hope that answers your question that at  
 4 least I do understand what drought term permits  
 5 were, their role, and then their relative impact  
 6 to the model.  
 7 Q. And with the implementation of multi-year flex  
 8 accounts versus the drought term permits, would  
 9 you agree that because with a multi-year flex  
 10 account it's read over five years, the use of  
 11 water would be different under a multi-year flex  
 12 account as opposed to a drought term permit?  
 13 Would that be a true statement?  
 14 A. Potentially, yeah, I mean, you're -- without  
 15 defining what that climate is over that  
 16 particular five years, to make it a  
 17 simplistical, you know, equation, all things  
 18 equal, you know, two years to five years, yeah,  
 19 it's -- it's a multiplier where you would have  
 20 to reduce just as you described.  
 21 Q. So if the drought term permits went into effect  
 22 in 2011 and if you just follow with me for a  
 23 moment and we assume that we had one year high  
 24 use and one year lower use and that's -- that  
 25 iteration is projected over the course of eight

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1 years, one year high, one year low, and those  
 2 drought term permits are no longer in place,  
 3 wouldn't that potentially change some of the  
 4 numbers in the modeling?  
 5 A. No, because you characterized as one year high  
 6 and one year low. If you look at the 2011 and  
 7 2012 values for the central well field storage  
 8 area, which is where the majority of the impact  
 9 will be, there is both years essentially of high  
 10 relative to what is normal. If you look at  
 11 years nine and ten, which are relatively normal  
 12 years, we're in the 7,000s. If you look at  
 13 years one, two, three, all the way through  
 14 eight, we are in the 10,000s. So it would be  
 15 two years of high, not one year of high and one  
 16 year of low; it would just be high, as 2011 and  
 17 2012 were both very, very tough drought years.  
 18 And I would anticipate that to continue through  
 19 a multi-year flex account program.  
 20 And the other thing that we contemplated  
 21 during the model is, again, during a very short  
 22 period of time, we saw Kansas statutes change  
 23 which allowed multi-year flex accounts and other  
 24 programs, which increased flexibility in moving  
 25 water from wet years and dry years back and

1 forth. To think that that will go down or  
2 decrease, we wanted to be conservative in our  
3 numbers. Again, we're trying to establish a  
4 reasonable bottom for the project based on 2060  
5 demands, and so there's an element of, well, we  
6 see these programs now, these programs are  
7 becoming more popular, not that that's a bad  
8 thing, I think it's a good thing for water use  
9 in the State of Kansas. However, we want to be  
10 prepared for that. So, again, that's in our  
11 contingency numbers in trying to understand how  
12 ag will be projected through the future. I  
13 think that the 2011 and 2012 values that are  
14 presented in the model are reasonable.  
15 Q. And I listened to your words carefully, you said  
16 in 2011 and 2012, we would assume that the use  
17 would be high during 2011 and 2012. So at least  
18 with respect to a multi-year flex account, as we  
19 go to years three through five of the drought,  
20 if it was high use in the first two years, there  
21 would be less use in years three through five.  
22 Is that at least a true statement, then, under  
23 your scenario?  
24 A. If they were rolled into a multi-year flex  
25 account, but that would also assume that the

1 the area that we're discussing is, of course,  
2 the City.  
3 Again, if you look at the values of net  
4 irrigation use in the central well field storage  
5 area, I don't have it off the top of my head,  
6 but I believe it's roughly 14,000 acre-feet  
7 authorized. We're below that number. I think  
8 that the values of 2011 and 2012 essentially  
9 represent what ag would do, it's what they  
10 actually reported.  
11 I don't -- I don't anticipate value in  
12 looking at -- if we look at even that delta of a  
13 few thousand acre-feet repeated over, let's say,  
14 eight years, so if we took the delta, what if  
15 everybody pumped their authorized quantity and  
16 that was the max 'cause that would essentially  
17 match the multi-year flex account program, that  
18 would be a peak value, I know there's some  
19 conservation built in there, but you'd only be  
20 talking about, let's say, four times eight as an  
21 example. So you'd be talking maybe 20 to  
22 30,000 acre-feet.  
23 That -- that amount of water over that  
24 period of time, I don't believe would result in  
25 significant water level changes. It could

1 entirety of the example, in this case water  
2 rights within the basin storage area or central  
3 well field area, would be actually enrolled in  
4 those programs. There are some very strong  
5 irrigation ag water rights within the basin  
6 storage area and central well field area such  
7 that a multi-year flex account may not be  
8 required. In other words, that water right is  
9 strong enough to support pumping during drought  
10 regardless. So it's just a high number followed  
11 by a high number consistently.  
12 Q. When you did your modeling, did you account for  
13 different irrigation pumping scenarios?  
14 A. No, we just repeated the 2011 and 2012 values,  
15 again thinking that those would be  
16 representative of what ag actually pumped since  
17 ag actually did that in 2011 and 2012, responded  
18 in that manner.  
19 Q. As far as future modeling goes, would that be a  
20 beneficial thing to think about and to alter the  
21 different irrigation pumping scenarios in the  
22 modeling?  
23 A. I don't believe it would provide significant  
24 water level changes in this instance because the  
25 large user driving the water level changes in

1 happen, but I think this is more representative  
2 of what would actually happen under the scenario  
3 that we've predicted and under the scenario that  
4 we modeled simply because those were actual DWR  
5 reported values.  
6 Q. And let me just ask this: Why didn't the City  
7 and the consultants for the City consider  
8 modeling different types of irrigation pumping  
9 scenarios?  
10 A. So you -- you predict things that you can  
11 control. I cannot control what an individual ag  
12 user does or doesn't do, whether they enroll in  
13 a multi-year flex account or they don't. We can  
14 look at things like net irrigation requirement  
15 and guess what an individual ag user may do.  
16 What we don't know are things like irrigation  
17 efficiency. Basically, you get down into the  
18 weeds so far that your precision of how your  
19 answer changes -- the precision of your answer  
20 doesn't change much. So in other words, you  
21 could go to a lot of effort without -- with  
22 diminishing return on the value of your answer.  
23 It's not that there wouldn't be value in  
24 doing that, you could go through that exercise,  
25 you could try and understand those -- those

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1 impacts, but, again, we have DWR reported values  
 2 that I think are adequately representative. And  
 3 then when we just talked about what the  
 4 potential delta would be in a worst-case  
 5 scenario, we're on the order of maybe 20 to  
 6 30,000 acre-feet over the entire drought period  
 7 just in that net increase. So if we applied  
 8 that additional 20,000 acre-feet over the  
 9 central well field water, we're not talking  
 10 about, in my opinion, substantial water level  
 11 changes to justify going at a water-right-by-  
 12 water-right basis and doing an examination. So  
 13 that would be my opinion.  
 14 Q. Would you agree that in the modeling performed  
 15 by the City and the City's consultants that the  
 16 water use demands for the City changed during  
 17 that eight-year period? Would you agree with  
 18 that statement?  
 19 A. Sure.  
 20 Q. And so I guess my question is if the water use  
 21 demand for the City changed during that  
 22 eight-year period, why were they held constant  
 23 for industrial users or irrigation users during  
 24 that eight-year period?  
 25 A. Well, they weren't held constant. Clearly table

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1 2-6 that we just talked about shows that they're  
 2 varying, and that is an observed value. From a  
 3 logical standpoint as a modeler, the best that I  
 4 can assume is that someone who pumped under a  
 5 certain set of conditions, under the same  
 6 hydrologic conditions, what would that  
 7 individual user do? Unless someone can give me  
 8 a very, very good reason why that user would do  
 9 something different, I would then consider it.  
 10 I think for, again, the purposes of this model  
 11 for ag, I've just previously described the  
 12 amount of delta that could occur even in a  
 13 worst-case scenario.  
 14 For an industrial user, whether that's heat  
 15 dissipation or whatever that scenario might be,  
 16 we might actually see some increases in the  
 17 industrial portion of that demand, just 'cause  
 18 that's the nature of industry, industry grows.  
 19 That's a good thing economically. So when we  
 20 look at maybe industry, we would actually see  
 21 demand potentially go up, which would cause, of  
 22 course, water levels to go down further.  
 23 I'm just trying to think of a scenario  
 24 where it would be outside of the bounds of what  
 25 was put together in the report in terms of

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1 reasonableness and -- and the number of  
 2 acre-feet taken out in a given year, and I think  
 3 we've got a pretty good justification.  
 4 Q. On page 2 of your expert report, you mention  
 5 that the model accounts for return flows. Is  
 6 that a true statement?  
 7 A. It does.  
 8 Q. And did you account for a potential change in  
 9 return flows during drought conditions?  
 10 A. No, it is based on -- so when we're talking  
 11 irrigation return flows, for the record, the way  
 12 the USGS model approach -- in this instance  
 13 approached the problem of return flows, so when  
 14 you irrigate, not all that water goes to  
 15 producing crops or evapotranspiration; some of  
 16 that water makes it past the crop root zone and  
 17 percolates downward back into the aquifer; that  
 18 is where we come up with the term net. So in  
 19 other words, if I pump 100 acre-foot of water,  
 20 90 of that may be consumed, some of that goes  
 21 back down to the aquifer, and that's what we're  
 22 calling net.  
 23 So that net value is based on a calculation  
 24 that is prescribed within the original USGS  
 25 model documentation. That net value is based on

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1 DW reported -- DWR reported system types, so  
 2 things like irrigation of efficiencies, so if  
 3 someone with a flood system versus someone with  
 4 a center pivot system, there is an efficiency  
 5 difference there, there is a difference in  
 6 return value, or net irrigation, that is  
 7 represented within the model, we do that. We  
 8 allow for that net consumption value to be  
 9 adjusted based on the DWR reported.  
 10 When you fill out a DWR water use report,  
 11 you report the system type that you used for  
 12 that particular acreage and that particular  
 13 water right. We use that within the model to  
 14 say what is the estimated return for that  
 15 particular pumping that occurred. So that is  
 16 how net irrigation is taken care of in the  
 17 model, and that is -- again, we do that in  
 18 accordance with the original USGS model  
 19 documentation.  
 20 Now, your question was how do we look at  
 21 how that might change during drought. It's  
 22 speculation to see whether that would go up or  
 23 down. That depends on the individual system, it  
 24 depends on how that user operates, it depends  
 25 on, again, the type of system. Flood may not

1 change as much as a more efficient system, such  
2 as center pivot or drip tape.

3 I'm just trying to think of a reason it  
4 would change, and the efficiencies of those  
5 systems, probably not going to change a whole  
6 lot. Again, we're talking about a very, very  
7 minute number. If you look at the total  
8 pumping, that -- that value still came out, so  
9 we'd be talking in worst-case scenario, most  
10 everything in the basin storage area is still on  
11 fairly efficient systems, so we're talking about  
12 center pivots and things of that nature, so  
13 you're talking maybe 93 percent as a -- as a  
14 value. So we're talking about 7 percent of  
15 total pumping. Even that distributed over the  
16 eight years, I don't anticipate having a large  
17 value. So that's -- that's one of the reasons  
18 we didn't -- didn't look at it, it was just the  
19 net impact to the proposal.

20 Q. Okay. Let me just ask you this in a basic  
21 sense, let's say that we assume for a moment  
22 that the water is -- or the ground is saturated,  
23 that we've had some wet years. Would more water  
24 in the account of -- when we're talking about  
25 return flows, would more water return to the

1 can come up with a better answer. We could  
2 certainly try a different approach, but I don't  
3 know that we'd end up with any better precision  
4 or accuracy than what we've got in the report  
5 right now.

6 Q. And I understand that every situation is a  
7 little different, we're talking about different  
8 soil types, we're talking about different  
9 infrastructure, things of that nature, but I'm  
10 just asking in general that if it's a wet year  
11 and an irrigator puts -- there's 10,000, let's  
12 say, acre-feet of return flow from irrigators in  
13 a wet year versus 10,000 acre-feet of return  
14 flow during a dry year, in your estimation,  
15 during a wet year, would more of that  
16 10,000 acre-feet enter into the aquifer versus  
17 during a dry year when, say, the roots of a tree  
18 or the roots of a crop would absorb that return  
19 flow before it was actually able to go into the  
20 aquifer, that's my question?

21 A. All right. So you'd end up potentially both  
22 ways, so you would have a higher runoff  
23 probability under a wet year. So if you were  
24 applying water to a given situation, it depends  
25 on very much the soil types. If there's not a

1 aquifer if the ground is saturated during a wet  
2 year versus during a dry year when the ground is  
3 very dry?

4 A. The answer is it depends. If we're talking  
5 about net irrigation from a -- we're not talking  
6 about rainfall and precipitation, your question  
7 was oriented towards pumping?

8 Q. That's right.

9 A. Okay. Under that scenario, it depends. So  
10 you're talking about daily operation decisions  
11 of an individual user, which I cannot control,  
12 nor would I try and estimate. The -- the  
13 closest I would come to an approach would be  
14 looking at net irrigation value. So in your --  
15 in your example where someone says, okay, let's  
16 have -- we have a saturated value, it rained,  
17 the water is standing, let's say, out in the  
18 field, do we need to irrigate that day? That's  
19 an individual user's decision. The return flow  
20 would potentially be different. That water  
21 could run off as opposed to infiltrating.  
22 Conversely, when it's dry, there is more crop  
23 demand, depending on the condition of that crop,  
24 so that also depends.

25 So long way of saying I don't know that we

1 demand from the plants in that instance because  
2 it is wet and let's assume that we do have sandy  
3 soils in this instance just to make it easy  
4 conceptually for everyone to look at here, if it  
5 was wet and we just didn't have, let's say, the  
6 crop, cool day, wet, not as hot, non-drought, if  
7 we apply water and that water doesn't get  
8 absorbed in the root zone during those wet  
9 conditions, it would simply bypass and make it  
10 as return flow, so the number would be higher.

11 Conversely, on a worse soil where you have  
12 saturation, the plants already have as much  
13 water as they need and you could have runoff so  
14 it could actually be less. But in your  
15 instance, I think you're referring to sandy  
16 soils maybe, it depends on what your -- what  
17 your soils are really.

18 Q. So as far as answering the question, it's  
19 hard -- you're not able to come up with an  
20 answer based on whether there'd be more return  
21 flow in a dry year versus a wet year, you don't  
22 have any estimate or --

23 A. It's --

24 Q. -- guess as far as what would occur?

25 A. It's literally a daily soil water balance

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1 question, and the key value in there is soil,  
 2 and the next part of that is water balance. If  
 3 I don't have one, it's hard to determine the  
 4 other. It could go either direction on your  
 5 question.  
 6 Q. And I'm -- and I'm asking you based on your  
 7 knowledge of the soil types in the Equus Beds  
 8 Aquifer region, in that well field area, and  
 9 this is based on your knowledge and you project  
 10 that over the whole of the aquifer, do you  
 11 believe more water would return into the aquifer  
 12 from return flow during a dry year versus a wet  
 13 year, or do you have an answer to that?  
 14 A. As a -- as a bulk net value, I would say -- I  
 15 would guesstimate that we could potentially see  
 16 irrigation return flows go down. Assuming that  
 17 the crop differential, the demand for that water  
 18 that's in the root zone, if we're applying it  
 19 and being effective irrigators and good  
 20 conservationists, that's where we want the  
 21 water. In other words, we want the soil and the  
 22 crop to use it, not have it go back down and  
 23 just simply repump it. So from that standpoint,  
 24 we would see the effective return value or the  
 25 net irrigation value, we would see that number

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1 go down, so in other words less return to the  
 2 aquifer under that situation.  
 3 Q. It would go down during a time of drought, is  
 4 that what you're saying?  
 5 A. Sure, under dry conditions. If, again, we're  
 6 applying it in the manner that we're keeping the  
 7 moisture value in the root zone in that optimal  
 8 condition.  
 9 Q. Do you know if there's research or applications  
 10 from an engineering standpoint where one can  
 11 better predict what return flows would look like  
 12 during a wet year versus a drought year as far  
 13 as modeling goes?  
 14 A. In this instance, taking a basin water approach,  
 15 probably not. Not -- again, relative to the  
 16 value of the improvement of the model results,  
 17 you could probably do it. I just -- I probably  
 18 wouldn't at this -- at this level detail.  
 19 Q. Okay. And without beating a dead horse, at  
 20 least as it relates to the City's modeling, the  
 21 City didn't take into account a change in return  
 22 flows during wet years versus dry years; is that  
 23 true?  
 24 A. That's correct.  
 25 Q. I'd ask that you flip to page 2-3 of the City's

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1 proposal.  
 2 A. Okay.  
 3 Q. Now, on page 2-3 of the City's proposal --  
 4 perhaps I'm not on the right page. Yes, there  
 5 it is. If you go about two-thirds down on that  
 6 page, it refers to the E&S well field.  
 7 A. Okay.  
 8 Q. First of all, what is the E&S well field?  
 9 A. That is the local well field that is within the  
 10 core of the City of Wichita. That is  
 11 represented, I believe, on figure 1, you can  
 12 kind of see where that is at, it is in  
 13 essentially -- near the convergence of the Ark  
 14 River and Little Arkansas River.  
 15 Q. And on page 2-3 of the proposal, it says, E&S  
 16 well field is not considered a firm source  
 17 during drought due to water quality and limited  
 18 capacity during lowered Arkansas River flows.  
 19 Is that what that sentence states?  
 20 A. That is accurate.  
 21 Q. What is meant by that statement?  
 22 A. Well, I think it establishes both the reason  
 23 that it is not a firm source -- a firm source is  
 24 something you can count on in terms of the water  
 25 supply planning industry, something that will be

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1 there day in, day out under a varying set of  
 2 hydrologic conditions.  
 3 The E&S well field is a alluvial well  
 4 field, it is a shallow aquifer at that location  
 5 that very, very much relies on surface water  
 6 flows for support. And what we know is that  
 7 during lower flows, the water quality in the  
 8 Arkansas River gets poor. We also know that  
 9 during lower flows, the capacity of the well  
 10 field diminishes greatly. So that is the reason  
 11 it is not necessarily a firm source of supply  
 12 because of both the water quality challenges and  
 13 the shallow aquifer at that particular location.  
 14 If we don't have sustained river flows, we  
 15 don't have the water quality that makes it a  
 16 viable source or a good source of water for the  
 17 City, nor do we have the yield that we would  
 18 like to see from that particular well field  
 19 during drought. So in other words, as things  
 20 get drier, very, very much that well field gets  
 21 poor in yield and water quality both.  
 22 Q. With respect to the Bentley reserve well field,  
 23 what is the Bentley reserve well field in that  
 24 next sentence?  
 25 A. So that would refer to there are a string of

1 wells that I believe have a specific trigger  
 2 relative to the flow in the Arkansas River; I'm  
 3 not sure if it's an elevation or if it's a flow  
 4 level. But if flow does not exceed a certain  
 5 point or if the river elevation does not exceed  
 6 a certain point, those wells cannot come on by  
 7 their permit conditions.  
 8 Those wells are essentially capturing  
 9 induced surface water flow, so when they pump,  
 10 they pump essentially, after a certain time,  
 11 water that is sourced from the Arkansas River  
 12 rather than pumping groundwater. While they are  
 13 wells, they are very, very much sourcing water  
 14 from the main point of recharge, which is the  
 15 river. Essentially put, if the river does not  
 16 flow well enough, the water quality and total  
 17 amount of flow in the river does not support the  
 18 permit conditions that are tied to those  
 19 particular wells for pumping, ergo it is not a  
 20 firm source of supply because it cannot be  
 21 counted on during low flow conditions.  
 22 Q. Do you know what the authorized quantity is for  
 23 the E&S well field off the top of your head?  
 24 A. I don't off the top of my head.  
 25 Q. Do you know off the top of your head what the

1 **PRESIDING OFFICER:** Yes.  
 2 **MR. STUCKY:** I'd like to mark this  
 3 as GMD Exhibit 81, add it to our notebook.  
 4 (GMD Exhibit Number 81 Marked for  
 5 Identification.)  
 6 **MR. STUCKY:** And just for the  
 7 record, this exhibit was previously  
 8 furnished to the other parties in this  
 9 room. It's a new exhibit that we're adding  
 10 to our notebook.  
 11 **BY MR. STUCKY:**  
 12 Q. Would you -- can you tell me by looking at  
 13 Exhibit 81 what it is? And if I were to tell  
 14 you that it's use reports for the Bentley well  
 15 field and the E&S well field, would you have a  
 16 reason to disagree with that statement?  
 17 A. No, and I'll describe them for the record here.  
 18 The piece of paper that I have in front of me  
 19 currently looks like it is a WIMAS Water Right  
 20 Information Sheet, which is a online database  
 21 that DWR and KGS, I believe, host. The printouts  
 22 that I have in front of me are for, looks like  
 23 water right 45296, 45297, Sedgwick 1, and 42879,  
 24 so that gave me a little time to digest.  
 25 Q. Based --

1 authorized quantity is for the Bentley well  
 2 field?  
 3 A. I don't have that off the top of my head.  
 4 Q. Can these sources be used during a time of  
 5 drought?  
 6 A. We can sure try. I mean, that's -- that's the  
 7 spirit of -- I mean, we can try. If they're  
 8 available and the water quality and the  
 9 drought -- or the specific triggers for flow in  
 10 the case of the Bentley reserve field, we could  
 11 try. Is it appropriate to assume that they are  
 12 going to be available in drought in terms of  
 13 resource planning? No. Do I think that could  
 14 we try and use them if they're available and  
 15 water quality for that day allows for the  
 16 blending of those resources? Sure, I think the  
 17 City would probably try that. But to count on  
 18 that from a firm planning standpoint, no, it  
 19 wouldn't be appropriate.  
 20 Q. Do you know if the Bentley well field and the  
 21 E&S well field were used -- were used in 2011  
 22 and 2012?  
 23 A. I believe they tried, yeah.  
 24 **MR. STUCKY:** May I approach the  
 25 witness?

1 **MR. STUCKY:** Well, first of all, I'd  
 2 like to move to admit the District's  
 3 Exhibit 81 into evidence.  
 4 **PRESIDING OFFICER:** Any objections?  
 5 **MR. MCLEOD:** I'm going to object  
 6 just on the basis and the point that when  
 7 Counsel says previously furnished, he means  
 8 just before the hearing today, and we, you  
 9 know, have had issues with scheduling. It  
 10 is just hard to conceive that in the  
 11 massive set of exhibit books that the  
 12 District put together they couldn't have  
 13 timely included this exhibit.  
 14 **PRESIDING OFFICER:** Your response.  
 15 **MR. STUCKY:** I guess my response was  
 16 that at the last hearing there was certain  
 17 exhibits that we were furnished right  
 18 before the hearing and just based on the  
 19 fact that there was substitute exhibits or  
 20 additional exhibits that we received right  
 21 before the hearing, we didn't object on  
 22 those grounds alone.  
 23 And, of course, this -- there's a  
 24 voluminous amount of exhibits that are  
 25 included here, and this aspect of the

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1 authorized quantity and the past use for  
 2 the E&S well field and the Bentley well  
 3 field, that more recently came to our  
 4 attention as something that perhaps that  
 5 would be relevant to discuss.  
 6 So we're asking that -- and,  
 7 additionally, there was no requirement in  
 8 this administrative hearing that the  
 9 exhibits be furnished in advance. We tried  
 10 very hard to do so, and we gave all our  
 11 exhibit notebooks in advance of the  
 12 hearing, we did our best to do so, but  
 13 there was no strict requirement of when  
 14 they be furnished. And so we're asking  
 15 that it be admitted and that that's not a  
 16 grounds for the objection.  
 17 **PRESIDING OFFICER:** And give me just  
 18 a minute.  
 19 **MR. MCLEOD:** Madam Hearing  
 20 Officer --  
 21 **PRESIDING OFFICER:** Yes.  
 22 **MR. MCLEOD:** -- I would just like to  
 23 say by way of rejoinder, I don't think what  
 24 Counsel has said is accurate as concerns  
 25 any exhibits from the City. I don't

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1 believe that the City has provided exhibits  
 2 just prior to the hearing at any stage of  
 3 the proceedings.  
 4 **PRESIDING OFFICER:** Mr. Stucky, as I  
 5 understand it, these documents are derived  
 6 by DWR, they are statements of fact and  
 7 reported usage of the water rights, some of  
 8 the water rights, at least, that are at  
 9 issue in this case; is that right?  
 10 **MR. STUCKY:** That is correct.  
 11 **PRESIDING OFFICER:** Okay. In light  
 12 of the fact that I had previously taken  
 13 administrative notice of orders issued by  
 14 or on behalf of the chief engineer,  
 15 specifically the approved water permits for  
 16 the ASR Phase I and Phase II project,  
 17 including official written explanations,  
 18 transmission documents, findings and  
 19 orders, to me this would fall closely  
 20 enough within that category, so I'm going  
 21 to allow them. Thank you.  
 22 **BY MR. STUCKY:**  
 23 Q. As you look, Mr. Clement, at Exhibit 81, could  
 24 you tell from having looked at Exhibit 81 what  
 25 the authorized quantity is both for the E&S well

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1 field and the Bentley well field based on  
 2 looking at these documents?  
 3 **A. I would -- so the E&S well field has a number of**  
 4 **water rights, with water rights limitations, I**  
 5 **don't have that net quantity limitation in front**  
 6 **of me. So while this does show authorized**  
 7 **quantity, I'm not sure that it shows the net**  
 8 **quantity. So for that, I -- it's not that I'm**  
 9 **going to decline to answer, I just don't know.**  
 10 **Without that net quantity and the actual, maybe,**  
 11 **certificate in front of me, it would be**  
 12 **speculation on my part to tell you what the**  
 13 **authorized quantity would be.**  
 14 Q. So there's multiple wells for both the E&S well  
 15 field and the Bentley well field, and to  
 16 determine what that total authorized quantity  
 17 is, you would have to add up the authorized  
 18 quantities for all those wells, is that -- is  
 19 that what you're saying?  
 20 **A. No, that'd be inaccurate. Again, speaking to**  
 21 **how complex municipal water rights and even some**  
 22 **ag water rights can be, you can have a lot of**  
 23 **individual authorized quantity. In other words,**  
 24 **let's say we've got three wells that are 1,000**  
 25 **acre-feet apiece, you -- you want flexibility in**

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1 **how you can take water in the municipal**  
 2 **industry, so that's how each individual water**  
 3 **well, if we just added them all up, maybe it**  
 4 **would sound like we're authorized for**  
 5 **3,000 acre-feet in that instance, in that**  
 6 **hypothetical, but in reality there could be a**  
 7 **net limitation clause, there could be something**  
 8 **that is either part of the permit condition or**  
 9 **certificate for that particular water right that**  
 10 **limits it to something less than that.**  
 11 **So in other words, we've got 3,000**  
 12 **acre-feet that we could pump if you just summed**  
 13 **the individual wells together; however, there**  
 14 **are cases, and I believe it is the case with E&S**  
 15 **and perhaps even Bentley, where some of those**  
 16 **water rights may be limited back to a net**  
 17 **clause, which is -- I don't see that in front of**  
 18 **me.**  
 19 Q. Well, let's talk about, just a little bit about  
 20 this document. On the very first page, there's  
 21 a water right number; is that right?  
 22 **A. So the page that I have in front of me is**  
 23 **reference to water right 45296.**  
 24 Q. And in the comment on this document, it says  
 25 it's part of the Bentley reserve well field, is



1 that -- would you also agree with that?  
2 **A. It appears to be referring to Bentley reserve**  
3 **well field 2 in the comment section.**  
4 Q. And at the bottom of that document, toward the  
5 bottom right-hand portion of that document, it  
6 shows that there's water use in the Bentley  
7 reserve well field -- at least for this specific  
8 water right in the Bentley reserve well field,  
9 it shows water use in 2011 and 2012. Can you  
10 tell me what those numbers are?  
11 **A. For this particular page, 281.5 acre-feet in**  
12 **2011; and 2012, it looks like a reported value**  
13 **of 58.9.**  
14 Q. And if we flip to the next page of this  
15 document, there's a different water right  
16 number, which is 45297, and it also indicates  
17 it's part of the Bentley reserve well field  
18 number 2. Is that an accurate statement?  
19 **A. According to the comments, yes.**  
20 Q. And for this particular water right, would you  
21 agree that the use in 2011 and 2012 was  
22 368.47 acre-feet and 123.45 acre-feet  
23 respectively?  
24 **A. As reported on the page, yes.**  
25 Q. And if we were to flip to the very next page, in

1 Q. And if we flip to the very next page and look at  
2 this additional well, what is the use in 2011  
3 and 2012, what are those numbers?  
4 **A. 794 and 284.**  
5 Q. Flip to the next page, what are -- what is the  
6 use for 2011 and 2012?  
7 **A. 766 and 145.**  
8 Q. Acre-feet?  
9 **A. Yes.**  
10 Q. And on the very next page for 2011 and 2012?  
11 **A. Referring to the very next page, which would**  
12 **refer to in the comment section as well**  
13 **number 4 -- or well number N-4, 2011 and 2012**  
14 **would be 94.68 and 95.6.**  
15 Q. And if we flip to the very next page, what is  
16 the water use for 2011 and 2012 for this  
17 separate well in the E&S well field?  
18 **A. It appears that zero in -- I'm looking at the**  
19 **page that says, in the comment section, 100 feet**  
20 **south of previous point of diversion, so I don't**  
21 **know which well this is for, but that is what's**  
22 **in the comment section, and the year 2011 is**  
23 **zero, and the year 2012 is 136.**  
24 Q. Same question for the very next page?  
25 **A. Looks like 2011 is 200 and 2012 is 5.**

1 the very next page there's a water right number  
2 at the top that says SG 1-00. If I were to tell  
3 you that this was part of the E&S well field,  
4 would you have reason to disagree with that  
5 statement?  
6 **A. According to the comments here, it describes it**  
7 **as well number S-1 in lot 4, southeast of the**  
8 **southeast of the southwest. So that appears to**  
9 **be coordinating to one of the S wells,**  
10 **specifically S-1.**  
11 Q. And that would be part of the E&S well field?  
12 **A. Yes.**  
13 Q. And in 2011 and 2012, there's -- there's  
14 acre-feet of water that were used from this --  
15 from this particular well. What is that  
16 acre-feet that's shown?  
17 **A. 797 for the year 2011 and for the year 2012,**  
18 **246.**  
19 Q. And if we flip to the very next page, there's  
20 a different -- well, yeah, there's a different  
21 well within that E&S well field that's depicted  
22 on this very next page, what is the water use in  
23 2011 and 2012 with respect to those additional  
24 wells?  
25 **A. Looks like 794 and 270.**

1 Q. And then for the final page, same questions for  
2 2011 and 2012?  
3 **A. The final page for 42879 is the water right**  
4 **number, it looks like 2011 is 874 and 2012 is**  
5 **131.**  
6 Q. So would you at least agree with me that during  
7 2011 and 2012, there was a significant amount of  
8 acre-feet of water that was utilized out of the  
9 Bentley well field and the E&S well field?  
10 **A. I wouldn't say significant, I would say they**  
11 **were used.**  
12 Q. If we were to add up the amount of acre-feet  
13 that you just went through as you mentioned  
14 those numbers, would you agree that the  
15 acre-feet was in the thousands, if we were to  
16 add it all together?  
17 **A. Sure.**  
18 Q. And are you saying that acre-feet in the  
19 thousands is not significant?  
20 **A. I'm saying acre-feet in the thousands relative**  
21 **to the way the City is forced to plan, the City**  
22 **must make water for its users, there's no doubt**  
23 **there. How we look at the year 2060 and how the**  
24 **drought will impact water resources is taken**  
25 **care of within the model and water resources**

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1 planning that was done by the City.  
 2 As I mentioned previously, both the Bentley  
 3 reserve well field and the local well field have  
 4 both water quantity and quality challenges, and  
 5 my review of the document just now noticed that  
 6 in specifically 2011 there was a higher value of  
 7 usage, at least in trend from my glance at the  
 8 document, as compared to 2012, and that would be  
 9 consistent with declining yields and water  
 10 quality that would be in both of those  
 11 resources. So from a planning perspective, it  
 12 makes sense that the City is looking at the  
 13 value of those resources relative to what they  
 14 mean for not only producing just wet water but  
 15 also water quality and then the role of that  
 16 resource during drought as a firm source of  
 17 supply.  
 18 So while the City was able to use the water  
 19 obviously from some of those resources in 2011  
 20 and 2012, from a prudent planning standpoint,  
 21 the City opted to look at what is the demand  
 22 associated with pumping much better water  
 23 quality from the Equus Beds and Cheney relative  
 24 than trying to use those resources. It doesn't  
 25 mean the City can't use those resources; it's

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1 just they're not going to be firm sources of  
 2 supply.  
 3 The value or the amount of water that can  
 4 be pumped from those resources, especially  
 5 during prolonged drought, I would anticipate to  
 6 decline precipitously. Meaning that during 2011  
 7 river flows were actually not terrible; they  
 8 were declining, certainly, during drought, but  
 9 the availability of that resource was more so  
 10 available than it would be in, let's say, 2012,  
 11 which follows with the water use trends. We're  
 12 going to see that continue to decline during  
 13 drought, at least during sustained, prolonged  
 14 drought, so the value of those resources may not  
 15 be adequately represented by just looking at  
 16 2011 or 2012 in this instance; we would have to  
 17 look at the yield of those resources in detail  
 18 and how they would serve the role of that  
 19 eight-year drought.  
 20 And we did that during our evaluation  
 21 process. It was my recommendation and during  
 22 review of the role of those resources that we  
 23 would just assign that demand to the Equus Beds  
 24 well field knowing that they were not firm  
 25 sources of supply. Can we use those resources

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1 and is that a benefit to everyone if we have the  
 2 opportune moment to do that? If water quality  
 3 standards can be met where the City could  
 4 utilize those resources, I think they would  
 5 probably do that. But do we want to count on  
 6 those from a municipal planning standpoint as  
 7 that is a guaranteed, let's say your example of  
 8 5,000 acre-feet? Probably not from a prudent  
 9 planning standpoint.  
 10 Q. Just a moment ago, you said with respect to the  
 11 City's modeling that you assigned the use from  
 12 the Equus Beds -- or from the E&S well field and  
 13 the Bentley well field to the aquifer, that you  
 14 would assign that use to the aquifer itself, is  
 15 that what you just said?  
 16 A. Essentially the demands that are generated in  
 17 the report came from the City and the City said,  
 18 here's how we're going to do those allocations.  
 19 So did I personally assign them? No, the City  
 20 said, here's how we're going to operate, here's  
 21 how we're going to take resources at different  
 22 pieces of time throughout the drought based on  
 23 2060 demands. Did I do that? No. Do I think  
 24 that allocation of splitting it between the two  
 25 major resources that the City has is reasonable?

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1 Yes.  
 2 Q. So if I were to ask you the question this way,  
 3 if the City were to, let's say, at 3,000  
 4 acre-feet, let's just use easy numbers, 3,000  
 5 acre-feet, let's say hypothetically it could  
 6 come from the E&S well field and the Bentley  
 7 reserve well field, let's assume for a moment,  
 8 and that 3,000 acre-feet under the City's  
 9 modeling and proposal is assigned to the  
 10 aquifer, would you agree with me, at least, that  
 11 if we reassign that 3,000 acre-feet from the  
 12 aquifer and instead take it from the E&S well  
 13 field or the Bentley well field, that would at  
 14 least reduce the demands on the aquifer?  
 15 A. It would reduce the demands, yes.  
 16 Q. And so I guess my question is why, if there was  
 17 use of the E&S well field and the Bentley  
 18 reserve well field in 2011 and 2012, why  
 19 weren't -- why wasn't that considered as a  
 20 source of supply, and why weren't those  
 21 acre-feet accounted for with the E&S well field  
 22 and the Bentley reserve well field?  
 23 A. So I'm going to try and be thorough just so we  
 24 can kind of keep things moving. So firm source  
 25 of supply is an industry term that says that

1 resource will be there day in and day out; the  
2 yield of that resource, the rate at which you  
3 can get it, it's guaranteed based on the  
4 hydrologic components of that resource. That is  
5 the definition to me of a firm source of supply,  
6 you have the water rights for it, hydraulically  
7 it can support it, you have the wells that can  
8 get it out of the ground in this example.  
9 Everything about that resource is firm, it can  
10 be counted on day in, day out, you have that  
11 resource tied up, it is -- it is very much firm.

12 So in terms of the Bentley reserve well  
13 field and the local well field, I would  
14 characterize the water rights and some of the  
15 other things associated with that very, very  
16 much based on river flow. Again, we're talking  
17 about an alluvial well field, so it is -- the  
18 yield of that resource is based on water flow in  
19 the river. As water flow in the river declines,  
20 so does the yield of the wells, so does the  
21 water quality in this instance, with natural  
22 salts occurring in the Arkansas River. For  
23 those two reasons, I would not classify both the  
24 Bentley reserve well field or the local well  
25 field as firm resources in terms of can you

1 Q. You indicated in your report and in the proposal  
2 itself that with respect to the 1 percent  
3 drought simulation, the data set for 1933 to  
4 1940 was not complete enough or had more limited  
5 availability and it couldn't be used; is that --  
6 is that true?

7 **A. That's correct.**

8 Q. However, is it -- is my understanding correct  
9 that data with respect to MODSIM modeling for  
10 Cheney was used between 1933 and 1940?

11 **A. That was not my work product. That's my  
12 understanding that basically the 1930s data, to  
13 the extent John Winchester could get it, obtain  
14 it, and use it, I believe that's -- that's how  
15 it was developed and used. I did not personally  
16 develop a review or put together any of the data  
17 that was used as the resource evaluation or flow  
18 values for Cheney so I can't speak to that, but  
19 that's my understanding is that 1930s data was  
20 used in the MODSIM model.**

21 Q. So as far as the question goes why that data set  
22 was appropriate for Cheney but not for the  
23 aquifer, that question is best left for  
24 Mr. Winchester?

25 **A. I believe so.**

1 count on the yield that's associated with those  
2 resources as a day in, day out, guaranteed  
3 source of supply, the answer would be no.

4 And so relative to prudent municipal  
5 planning, relative to what are reasonable  
6 bottoms for the ASR storage project area, when  
7 we look at how we might use water resources,  
8 especially during drought, from my perspective  
9 as a geologist and working on water supply in  
10 industry, would I recommend to a client that  
11 they plan on anything but having firm water  
12 resources in terms of planning an evaluation in  
13 terms of the drought model, my answer would be  
14 no.

15 Now, do we have the opportunity to take  
16 from Bentley and the E&S well field? Maybe, the  
17 answer is maybe. But when the question is what  
18 are the reasonable bottoms for the project, what  
19 are -- what are the worst-case scenario -- what  
20 worst-case scenario do we think we might  
21 actually be in based on drought, we wanted to be  
22 thorough and prudent in our projections to make  
23 sure that we had those resources accounted for  
24 in a capacity that was not firm. So I hope that  
25 answers your question.

1 Q. With respect to the MODSIM-DSS modeling and  
2 model, is it your belief that it's reliable?

3 **A. Well, in terms -- please define reliable for me  
4 so I can help you.**

5 Q. Well, from a scientific standpoint, do you  
6 believe that -- and I assume in college you took  
7 a course in statistics, and reliable was a term  
8 of art in statistics; is that -- is that true?

9 **A. You might rephrase your question so I can help  
10 you.**

11 Q. From a statistical standpoint, as the term  
12 reliable is known in statistics, do you believe  
13 that the MODSIM-DSS model results are generally  
14 reliable?

15 **A. I'm going to say yes, and I'm going to  
16 characterize what MODSIM is and what it isn't  
17 real quick. Models can be very scary black box  
18 if you don't know what they are, so I'm going to  
19 talk about what MODSIM-DSS is. Again, I did not  
20 run the MODSIM-DSS model for the specific  
21 projections and demands that were supplied to  
22 Burns & McDonnell so we could run the Equus Beds  
23 model, but I am familiar with what MODSIM-DSS  
24 is. And programs like MODSIM are extremely  
25 common, especially in western states where water**

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1 is scarce.  
 2 Basically, what MODSIM does is it allows  
 3 for allocations of resources strategically.  
 4 That could be as simple as, let's say, an  
 5 irrigation district that is set up on a  
 6 reservoir, is it going to rain tomorrow, is it  
 7 going to rain in two weeks? Once you take water  
 8 from that reservoir, it's essentially gone, but  
 9 it also might evaporate.  
 10 So you can make strategic decisions on how  
 11 you use water supply resources based on things  
 12 like forecasting and modeling, such as  
 13 MODSIM-DSS. It is essentially a calculator on  
 14 steroids that allows the user to use a GUI, or  
 15 graphical user interface, as a form to do the  
 16 programming and represent the  
 17 interrelationships, such as pipeline capacity,  
 18 permit conditions, and cost of those resources.  
 19 That is what MODSIM-DSS is.  
 20 Do I think that MODSIM-DSS in this case  
 21 fits the needs of the proposal in terms of its  
 22 reliability, its accuracy? Yes, essentially  
 23 because it's no more than, as I just mentioned,  
 24 a calculator on steroids. The reservoir  
 25 condition, the reservoir tables, I believe, are

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1 built into MODSIM in this case, so we know what  
 2 the storage values are, we know what evaporation  
 3 is going to happen at Cheney.  
 4 Same thing with the Equus Beds, we have the  
 5 permit conditions represented, we have the  
 6 pipeline capacity represented. Each one of  
 7 those things that you have to think about as a  
 8 utility is essentially represented within the  
 9 model. And what the model allows you to do is  
 10 run a forecasted simulation based on your  
 11 outcome-based decisions.  
 12 I want to manage Cheney at a certain level,  
 13 I want to manage the Equus Beds at a certain  
 14 level, different resources have different costs,  
 15 different resources such as the ASR credits may  
 16 go away over a certain period of time. What  
 17 MODSIM allows you to do is program all of those  
 18 things in code into what becomes essentially a  
 19 fancy Excel spreadsheet or a calculator. And so  
 20 from that standpoint, the ins, the outs, the  
 21 outputs, the capability to review what becomes  
 22 essentially a simple calculator is reliable.  
 23 Q. Okay. And I think you mentioned that you didn't  
 24 actually do the MODSIM modeling in this case or  
 25 do any of that MODSIM modeling; is that true?

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1 A. I am familiar with the model and how it works,  
 2 and certainly models like this, the decision  
 3 support tools are used in other places  
 4 throughout especially the Midwest where things  
 5 are scarce, especially water supply. It's not  
 6 uncommon to use models like this on a weekly or  
 7 a daily basis to figure out where you can  
 8 strategically take your water supply to the best  
 9 value of not only the resource but your  
 10 customers.  
 11 Q. But with respect to the City's modeling, you  
 12 didn't do the MODSIM modeling; is that right?  
 13 A. Not as it relates to the demands that were  
 14 supplied to the MODSIM model that were supplied  
 15 to the Equus Beds model.  
 16 Q. So I'm trying to save you some time,  
 17 Mr. Clement.  
 18 A. Sure.  
 19 Q. If I were to ask you a whole series of technical  
 20 questions about the MODSIM modeling, that  
 21 wouldn't be your field of expertise; is that  
 22 right?  
 23 A. I'm familiar with what MODSIM is. Did I make  
 24 the demands that were generated from the MODSIM  
 25 model, did I run the MODSIM model which

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1 generated the demands for the Equus Beds well  
 2 field groundwater modeling portion of the  
 3 project? No, I did not.  
 4 Q. Let's go to table 2-5 of the City's proposal,  
 5 and that's found on page 2-10.  
 6 A. Okay.  
 7 Q. And perhaps to just refresh a little bit, in the  
 8 third year of this modeling, the demand by the  
 9 City for water demand was the highest in the  
 10 third year, is that right, in this particular  
 11 table?  
 12 A. With respect to which resource or just total?  
 13 Q. Total resources?  
 14 A. Okay. Looks like -- so you're talking about not  
 15 the -- not the very last row, 'cause, again, we  
 16 have a -- we have a net demand to the City that  
 17 is the last row, so that is, okay, we know in  
 18 year 2060, we think we're going to need about  
 19 81,000 acre-feet of water supply. That number  
 20 changes based on conservation and how the City  
 21 is conserving their water supply. I don't have  
 22 a calculator in front of me, it looks like year  
 23 three, with total Equus Beds demand, which would  
 24 include the base water rights and ASR credits,  
 25 is roughly 60,000. Plus in this case 11,000.

1 I'd have to verify what the numbers are here  
2 because it looks like that 81,262 is being  
3 driven down by conservation. So, actually, year  
4 one would be the highest because it's not in  
5 conservation yet.

6 Q. Just -- and, I'm sorry, let's go to column -- or  
7 row, rather, one, two, three, four, five, six,  
8 seven where it says total EBWF and ASR. At  
9 least in year three with respect to those two  
10 components, the acre-feet is the highest in year  
11 three; is that right?

12 A. Yes.

13 Q. And so at the very bottom of this table, that  
14 shows total use and total demand out of both  
15 Cheney and the Equus Beds well field at the  
16 bottom of this table; is that right?

17 A. I believe so.

18 Q. Now, in this table, in year four, there is a  
19 stage 2 -- there's stage 2 drought planning that  
20 goes into effect; is that right?

21 A. Yes.

22 Q. And in year three, we're just in stage 1; is  
23 that right?

24 A. According to the City's MODSIM projections, that  
25 would be accurate.

1 Q. Now, in year four, which is stage 2, is it your  
2 understanding of the different stages of the  
3 City's drought planning that less water would be  
4 used in stage 2 versus stage 1?

5 A. Yes, you're reducing a net demand, an initial  
6 demand of, in this case roughly 80,000  
7 acre-feet. The way you reduce that demand is  
8 with conservation, so yes.

9 Q. So with that answer being yes, can you explain  
10 to me, then, if we go to the bottom of this  
11 table and we look at total demand in the end of  
12 year -- year three, which is 71,116 acre-feet,  
13 and then we look at year four after the stage 2  
14 is put into effect and that demand actually goes  
15 up to 71,890 acre-feet --

16 A. Uh-huh.

17 Q. -- can you explain to me why, then, the demand  
18 would go up after stage 2 is put into place?

19 A. Sure, I believe I can explain that. I think,  
20 and, again, I didn't create the demand results  
21 for this, but I would speculate, I believe it is  
22 the condition that -- remember, we have two  
23 separate models here. We have the MODSIM-DSS  
24 model, which is producing the demands to be used  
25 within the Equus Beds groundwater model. So

1 that last row where we have essentially a base  
2 demand of 80,000 acre-feet that is being nicked  
3 down based on conservation.

4 During that period, those -- the stress  
5 periods that we see at the top, MODSIM-DSS is  
6 not repeating the same year, so we have  
7 different hydrologic years that are being  
8 simulated there. Remember, we're talking about  
9 the 1930s drought, so those years are going in  
10 sequence, so the demand that's assigned with  
11 those years is going to be based on the  
12 hydrologic components of those years. So some  
13 years may be drier than others. The condition  
14 of Cheney Reservoir may be different than  
15 others. So that's where that difference is  
16 coming from.

17 So if we -- if we kept everything the same  
18 and we just said, okay, we're going to -- let's,  
19 for example, simulate year 1935, you would  
20 expect those numbers to be uniform. But we're  
21 seeing those numbers change because we're  
22 simulating the 1930s drought, and so the 1930s  
23 drought, year one may have a different demand  
24 than 1930s year -- drought year number two.  
25 That's basically what we're saying here is

1 inflows to Cheney, the hydrologic components,  
2 total demand, the temperature during the day,  
3 you know, irrigation requirements for people's  
4 grass, things of that nature, those are  
5 changing, it's not static, that's why the  
6 numbers are different. I hope that -- that  
7 helps.

8 PRESIDING OFFICER: I'm confused.

9 A. Okay. So the MODSIM-DSS is basically just  
10 saying where are we going to get, in this  
11 instance, 80,000 acre-feet of base demand from.  
12 There are a couple different ways to do that.  
13 We can get water from Cheney, we can get water  
14 from the Equus Beds, we can get water from ASR  
15 credits, we have a base demand of 80,000  
16 acre-feet. That demand gets reduced by the  
17 City's drought management plan.

18 So his question was why do we see values go  
19 up in year four from 71,000 to 70 -- let's call  
20 it 72,000 for rounding. It's because the  
21 MODSIM-DSS model isn't simulating the same year  
22 every year and the hydrologic conditions that  
23 are associated with that. Remember, we're using  
24 the drought years of the 1930s drought, so we're  
25 seeing hydrologic conditions change. Some years

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1 are wetter than others.  
 2 And so my guess would be that in year four,  
 3 things might have been drier than the previous  
 4 year, ergo the demand went up. Despite the  
 5 conservation value, we do see a small increase.  
 6 I would have to look at the values and the  
 7 outputs of the MODSIM model, but it's not a  
 8 static demand through that entire period. They  
 9 are simulating the 1930s drought, the river  
 10 flows associated with that, the temperatures  
 11 associated with that, and the changing demands  
 12 associated with that on a daily basis so that I  
 13 would anticipate a different value, not the same  
 14 value.  
 15 **PRESIDING OFFICER:** And forgive me  
 16 if I'm not tracking, but if we're using --  
 17 or they were using the 1930s values, I  
 18 thought they were using 2011 and 2012 to  
 19 simulate the 1930s values?  
 20 **A.** So, yes, so we have two different models. So  
 21 our role at Burns & Mac was to say, what is the  
 22 impact to just the aquifer based on, City, what  
 23 do you think you will actually need in year  
 24 2060? So we're going to talk about the  
 25 MODSIM-DSS model, forget about the groundwater

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1 model for now, separate model, so let's focus on  
 2 the MODSIM-DSS model and what it is. It is  
 3 simply a decision support tool that says under a  
 4 given set of conditions, water rights  
 5 conditions, pipeline capacity, drought response  
 6 plan, all the elements of the City's water  
 7 supply planning process, how those all interact  
 8 and interrelate, that's essentially what the  
 9 MODSIM-DSS model is.  
 10 So we can look at we have demands in 2060,  
 11 now we can say, okay, well, in 2060 if we have a  
 12 1 percent drought, what does that look like, how  
 13 are we going to manage that, how are we going to  
 14 get through that? Based on our current  
 15 policies, based on our current infrastructure,  
 16 how do we think we can best get through that?  
 17 MODSIM, that particular model, allows for the  
 18 interrelation of all of those things, so there's  
 19 code that says, well, on a certain day, I can  
 20 pump this much from Cheney to make my water  
 21 treatment plant process blend at this certain  
 22 rate. On a certain day, given certain demands  
 23 of 81,000 over, let's say, the year, how are we  
 24 going to meet that demand based on water rights,  
 25 all of those considerations.

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1 What's happening during that period is  
 2 we're not repeating 2011 and 2012. If you  
 3 remember John Winchester's work where he said,  
 4 here is the 1930s drought, here's what we  
 5 simulated. He's taking those years and putting  
 6 them into the MODSIM model and saying, how would  
 7 those individual years, how would our -- how  
 8 would our demand and where we source water react  
 9 to those years, not 2011 and 2012? So that  
 10 answer fed the Equus Beds groundwater model in  
 11 terms of the total demands to, we don't simulate  
 12 Cheney, but the Equus Beds well field and ASR  
 13 credits. Have I gotten there yet?  
 14 **PRESIDING OFFICER:** I'm trying to  
 15 figure out, and forgive me, if the MODSIM  
 16 model is based on Mr. Winchester's data?  
 17 **A.** It is based on, yes, 1933, I believe, through  
 18 1940, so the reason we see changing demands is  
 19 because we're not keeping the hydrologic  
 20 conditions in MODSIM the exact same through year  
 21 one, two, three, four, five, six, seven, eight;  
 22 we're making them mirror, or Mr. Winchester and  
 23 the City, Mr. Macey did, made those values  
 24 mirror what actually occurred in the 1930s  
 25 drought. So that's why we see different demands

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1 from -- we see demands go up in certain years  
 2 and maybe drop in other years because we're  
 3 actually simulating the 1930s drought in that  
 4 portion. So the inflows to Cheney would have  
 5 been not the same every year; they would have  
 6 been different because each hydrologic year is  
 7 different.  
 8 **PRESIDING OFFICER:** So this  
 9 particular table does not reflect the use  
 10 of 2011 and 2012 repeated over and over?  
 11 **A.** The last line would not, it is representing the  
 12 MODSIM model, not the Equus Beds groundwater  
 13 model.  
 14 **PRESIDING OFFICER:** But doesn't the  
 15 math at the bottom of this chart come from  
 16 the rest of the chart? How can part of the  
 17 chart be derived --  
 18 **A.** Sure.  
 19 **PRESIDING OFFICER:** -- from one  
 20 model and another one from another --  
 21 **A.** So --  
 22 **PRESIDING OFFICER:** -- if there's  
 23 additional -- I mean, if there is a  
 24 mathematical relationship at the bottom?  
 25 **A.** Yes, there is. So the -- let's talk about what

1 the Equus Beds groundwater model is. So in  
2 order to predict what levels we wanted to look  
3 at for a change, we had to understand how much  
4 water the City is going to pump from the Equus  
5 Beds, whether that's from their normal base  
6 rights or in addition ASR credits. In order to  
7 get that, we said, City, how much do you think  
8 you're really going to need during, let's plan  
9 for the year 2060.

10 So in order to get that answer, before we  
11 could even start groundwater modeling to figure  
12 out what a reasonable bottom for the project is,  
13 we had to rely on the City to say, okay, you  
14 have this other tool, this -- this water  
15 resources planning tool that has all of the  
16 components from infrastructure and you can throw  
17 different hydrologic years at it, all it is is a  
18 calculator. It just says under a given set of  
19 circumstances, how would you take water from  
20 your different water resources based on your  
21 policies, based on the infrastructure that you  
22 have in the ground, pipelines and pumps, based  
23 on water rights, it can incorporate all those  
24 things.

25 So before we can even run the Equus Beds

1 can't use the 1930s data simply because it  
2 doesn't exist in the groundwater model, what can  
3 we use that might match up the best that we have  
4 for available record with improved data, with  
5 recent streamflows? That was the genesis of why  
6 we used 2011 and 2012 in the groundwater model.

7 On the MODSIM side of things, I believe  
8 John Winchester had some available data from the  
9 1930s on flow. I believe he had information on  
10 flows, river flows, and how Cheney reacted or  
11 would have reacted back in the 1930s, that was  
12 his work. But he used that specific period of  
13 the 1930s drought, I believe it was 1933 through  
14 1940, to say under those conditions -- remember,  
15 MODSIM says how are we going to balance our  
16 water resources, knowing all of these things  
17 that we can represent with mathematical computer  
18 code, things like water rights, things like  
19 pipelines, things like pumps, things like permit  
20 conditions, things like policy, things like  
21 cost, things like water quality, those are all  
22 included as considerations within the MODSIM  
23 model as code.

24 So I believe Mr. Macey's work and Mr. John  
25 Winchester's work basically used the values of,

1 groundwater model, we need to know what the  
2 demands we want to include are within the  
3 groundwater flow model, and that comes from the  
4 MODSIM-DSS process. And since in the Equus Beds  
5 groundwater flow model, we don't have the years  
6 of 1930s to build the drought variables within  
7 the complicated groundwater model -- the  
8 groundwater model is much, much, much more  
9 complex than the MODSIM model. MODSIM model is  
10 basically an Excel spreadsheet exercise. The  
11 groundwater model is a complicated flow program.

12 So trying to think of a best way to explain  
13 this, but we didn't have in the Equus Beds  
14 groundwater flow model, we did not have data, at  
15 least in the original coverages. We may have  
16 had, I believe, one or two precipitation  
17 stations but really nothing else for temperature  
18 and some of the other things that feed into  
19 accurate calculations for the Equus Beds  
20 groundwater model, the hydrologic variables that  
21 went into that.

22 So we had to use surrogate data, and in our  
23 case, we found that 2011 and 2012 fit nicely  
24 with the target PDSI values that were developed  
25 by the MODSIM model. In other words, if we

1 okay, under a scenario of planning for the year  
2 2060, we have roughly 80,000 acre-feet of  
3 demand. Okay, now let's say a drought occurs,  
4 let's simulate the 1930s drought with MODSIM,  
5 let's simulate the river flows into Cheney,  
6 let's simulate the hydrologic conditions and  
7 the -- and the dry and hot conditions that would  
8 increase things like municipal demand in the  
9 City. That's all included in the MODSIM model.

10 And so they ran that forward, I believe,  
11 for the period 1933 through 1940 to say what --  
12 what demand should we place on the Equus Beds  
13 Aquifer and ASR credits to optimally manage all  
14 of our resources, to meet all of our water  
15 quality goals, to meet all of our permit  
16 conditions, to meet all of our water rights  
17 obligations, and to make the best security for  
18 our customers to have two water resources  
19 available, the two biggest water resources  
20 available throughout drought.

21 So MODSIM is providing the genesis for the  
22 Equus Beds well field demands. So they are very  
23 much interrelated. They are separate but MODSIM  
24 is providing how -- how do we take water during  
25 a drought. Okay, Burns & McDonnell, run the

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1 **model and tell us if we take this much water**  
 2 **during a drought, what do the new bottoms look**  
 3 **like. Does that -- does that help?**  
 4 **PRESIDING OFFICER:** Thank you.  
 5 **BY MR. STUCKY:**  
 6 Q. So with -- and, again, your answer was much more  
 7 complicated than this, but at least as it  
 8 relates to table 2-5, at the top part of that  
 9 table, these are iterations of 2011 and 2012  
 10 that are mentioned up there, but as we move to  
 11 the bottom of that table, we're talking about a  
 12 different type of data set. Is that what you  
 13 said?  
 14 **A. Yes. And I can see how that would be confusing.**  
 15 **So if you wanted to, you know, apply the -- just**  
 16 **for that very last row, if you wanted to apply**  
 17 **the drought years of the 1930s to just that very**  
 18 **last row, I think that would be reasonable to**  
 19 **clarify what those values are representing for**  
 20 **the record.**  
 21 Q. And so in my simple mind, I looked at year three  
 22 and it says 2011 at the top of that data --  
 23 those numbers toward the top of that table, and  
 24 then in year four it says 2012. And just a  
 25 moment ago, we discussed the net irrigation use

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1 in table 2-6, which is on the following page,  
 2 and you mentioned that net irrigation use went  
 3 down in 2012 versus the use in 2011, and so I  
 4 guess I'm still having a tough time  
 5 understanding that -- how in year four, after we  
 6 implement a more drastic stage of drought  
 7 planning, why the City's water use would go up,  
 8 I'm still having trouble understanding that --  
 9 that answer?  
 10 **A. Okay. So I'm going to see if I can make a**  
 11 **description for the record so we can get**  
 12 **everything translated here. Give me just a**  
 13 **moment. Maybe a couple moments but ...**  
 14 Q. If you were to refer to table 2-3, does that  
 15 help you?  
 16 **A. I was going to try and pull essentially what was**  
 17 **represented from John's original work, but I**  
 18 **think 2-3 might have that same sequence of the**  
 19 **1930s representation. What page is that on?**  
 20 Q. Page 2-5 of your proposal.  
 21 **A. Yeah, okay. That would be table 2-3, which is**  
 22 **explaining how MODSIM works. So if you wanted**  
 23 **to, say, take that simulated calendar year of**  
 24 **drought row and take that row and copy it and**  
 25 **paste it just underneath the line of the table**

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1 **that we were talking about previously, I think**  
 2 **that would be an easy way to explain it.**  
 3 **So MODSIM is simulating the years of 1933,**  
 4 **1934, 1935, 1936, so it is not the same year**  
 5 **over and over and over. It is simulating the**  
 6 **hydrologic conditions of those particular years**  
 7 **to generate how the City reacts to those**  
 8 **hydrologic conditions to meet water demands from**  
 9 **various resources.**  
 10 Q. So as you're sitting here today, do you know as  
 11 these MODSIM numbers were calculated how the  
 12 City's drought stages were accounted for, do you  
 13 know the answer?  
 14 **A. I think that is represented in figure 2. You**  
 15 **can see that the red line goes up, so you can**  
 16 **see that the City is going into more severe**  
 17 **drought restrictions. The left side represents**  
 18 **the Cheney Reservoir storage; the right side**  
 19 **represents the stages of the City's drought**  
 20 **response plan that they are entering into. That**  
 21 **is a result of the MODSIM model. So it shows at**  
 22 **what times the City is entering into those**  
 23 **various stages of drought response.**  
 24 Q. Well, let's go back to table 2-3, and maybe  
 25 that'll help us to answer my question. In table

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1 2-3, at the very top of that table, it says,  
 2 baseline City demand in acre-feet. And as far  
 3 as baseline City demand in acre-feet, it says  
 4 81,690 in year one, and for every year from year  
 5 one to year eight, the baseline City demand is  
 6 still 81,690 acre-feet. Is that a true  
 7 statement?  
 8 **A. That is correct.**  
 9 Q. So that number, at least, doesn't change; is  
 10 that right?  
 11 **A. That is correct.**  
 12 Q. Okay. So to get to -- from the baseline demand  
 13 to the revised demand, do you know how one  
 14 arrives at those numbers, and did the stage 1  
 15 and 2 drought planning factor into those  
 16 calculations?  
 17 **A. It should be, yes.**  
 18 Q. But as you're sitting here today, you don't know  
 19 what those exact calculations were or how they  
 20 were made?  
 21 **A. I know that they're made within MODSIM; I'm not**  
 22 **the one who did them, so I wouldn't be able to**  
 23 **go into super detail. I mean, but you can tell**  
 24 **what's happening there. Essentially the City is**  
 25 **saying I'm going to plan in the year 2060 for**



1 **82,000 acre-feet of demand. That demand will be**  
2 **satisfied in a couple different ways from its**  
3 **major water resources. How they get there, how**  
4 **they allocate resources changes over time based**  
5 **on the inflows to Cheney and how Cheney responds**  
6 **over time since it is the major factor for how**  
7 **conservation is enacted.**

8 You can see that in figure 2 that increases  
9 logically as Cheney decreases in the first two  
10 to three years there, you can see that  
11 conservation number go up. So the revised City  
12 demand from drought response plan is what it  
13 says, I mean, it's -- it is the revised demand,  
14 essentially shearing, in most cases here, at  
15 least 10,000 acre-feet of demand just with  
16 conservation alone.

17 Q. On table 2-3 in year one, it mentions 110  
18 percent for the starting level for Cheney, and I  
19 think it was testified by Mr. Macey, as I  
20 recall, that that was merely a typo or an error  
21 in that table; is that true?

22 A. I believe that to be the case. When looking at  
23 figure 2, which is a direct output from the  
24 MODFLOW modeling spreadsheets is my  
25 understanding, that number on the left side

1 and that particular error wasn't corrected after  
2 that email either, and I think you were also  
3 included as one of those recipients. Do you  
4 have explanation for why it wasn't addressed at  
5 that point in time?

6 A. No. I mean, it is what it is, it's a typo; for  
7 the record, I think it's probably a carry-over.  
8 At the time when we were doing water resources  
9 planning, we were looking at the frequency that  
10 the pool was above 100 percent prior to  
11 occurrences of drought and how often that would  
12 occur during, let's say, early spring  
13 conditions. Basically, we came to the  
14 conclusion that prudent planning would say just  
15 go ahead and consider it roughly 100 percent  
16 full, don't mess with the allocations, it seems  
17 logical that it's going to be 100 percent. It  
18 would be great if we can do more than that  
19 because that just ultimately relieves pressure  
20 on the Equus Beds and any of the other  
21 resources, but for the purposes of planning and  
22 for the purposes of the report, just refer to it  
23 as 100 percent, and I believe it's just a typo.

24 Q. So there was, at least, one point in which you  
25 were considering starting Cheney Reservoir and

1 during the beginning of the drought is roughly  
2 160,000, 165, 167,000 acre-feet, just looking at  
3 it graphically, which would correlate to  
4 100 percent, not the 110 percent, so I believe  
5 that number of 110 percent to be a typo. As was  
6 testified by Mr. Macey, I believe that to be the  
7 case, it is a typo within the report.

8 Q. When Mr. Macey was on the stand, I asked him why  
9 that particular error wasn't corrected after  
10 receiving a July 18, 2017 email from Tim Boese  
11 from the Equus Beds Groundwater Management  
12 District, and I believe, and we can pull out  
13 that email, but I believe that you were one of  
14 the recipients of that email from Mr. Boese, so  
15 I guess I'm asking the same question to you, why  
16 wasn't that portion of the table corrected back  
17 at that time?

18 A. I don't know. This is -- looking at the report,  
19 and it is roughly 2 1/2 inches thick, so there's  
20 a lot of information and data there. During  
21 review and assembly of the proposal, it's a  
22 typo.

23 Q. And also in Sep -- I also introduced a September  
24 18, 2017 email from the chief engineer,  
25 Mr. Barfield, who also identified that error,

1 the conservation pool as higher?

2 A. Sure, yeah.

3 Q. Did you ever consider doing an addendum to the  
4 proposal to address some of those particular  
5 errors?

6 A. I mean, I think we could, and I think this is  
7 what the hearing process is for, addressing  
8 things like this just to make sure that  
9 everybody is on the same page and we have  
10 100 percent clarity. So we could have issued an  
11 addendum; I don't know if there would have been  
12 any value at this point since the hearing  
13 process was going to take place. But, I mean,  
14 I'm comfortable with calling it a typo and the  
15 process has brought forward an issue and we have  
16 taken care of it so ...

17 Q. Did you consider addressing some of those typos  
18 or errors when your expert reports were  
19 submitted or your supplemental expert reports  
20 were submitted, did you consider addressing it  
21 in those expert reports?

22 A. I guess not.

23 Q. So I guess my question is if there was  
24 consideration made at least at one point in the  
25 analysis for a situation where the conservation

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1 pool was, let's say, at 105 percent, which is  
 2 allowed by the Army Corps of Engineers, versus  
 3 100 percent, how can we be assured that this is,  
 4 in fact, just a typo and that the modeling is  
 5 indeed based on Cheney being full at 100 percent  
 6 versus 110 percent, how can we be assured at  
 7 that?  
 8 **A. I think if you look at figure 2 it clarifies the**  
 9 **issues. And, again, I didn't run or create the**  
 10 **MODSIM model in this particular instance. I**  
 11 **would base my opinion that it is a typo based on**  
 12 **figure 2 and my knowledge of the pool, the**  
 13 **conservation pool being roughly 167,000, I**  
 14 **think, off the top of my head. And that**  
 15 **correlates to the graph being 100 percent and**  
 16 **not 110 percent. So that would be my**  
 17 **justification for that value.**  
 18 Q. With respect to table 2-5, in the previous  
 19 testimony, it was also identified that there  
 20 were some errors in table 2-5. Is that a true  
 21 recharacterization of the previous testimony?  
 22 **A. I believe so. It was, I think, in the City of**  
 23 **Wichita ASR credit pumping field under model**  
 24 **stress period five simply a math issue where**  
 25 **we -- we have 56,579 of total Equus demand, and**

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1 **that should have been 16,579 in City of Wichita**  
 2 **ASR credit pumping, I believe we had that**  
 3 **corrected.**  
 4 Q. And in previous testimony, it was identified  
 5 that that was also brought to your attention on  
 6 April 12, 2018 and you were one of the  
 7 recipients of that email identifying that error.  
 8 Do you have any opinion or testimony as to why  
 9 those errors weren't corrected --  
 10 **A. Well --**  
 11 Q. -- if it was brought to your attention back in  
 12 2018?  
 13 **A. -- I think as you just mentioned, the proposal**  
 14 **was submitted, I'm looking at the front date**  
 15 **here, 3/12/2018, so the date you mentioned was**  
 16 **April, I mean, it -- the process, the hearing**  
 17 **process we have now was very much anticipated.**  
 18 **And I believe that it was coordinated with not**  
 19 **only DWR but GMD2 at the time that there was an**  
 20 **understanding. And so without reissuing,**  
 21 **restamping that product, we coordinated with the**  
 22 **agencies that we thought were appropriate to let**  
 23 **them know of that issue as soon as we knew about**  
 24 **it and so that everybody was on the same page.**  
 25 **And I think it's really just a matter of cleanup**

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1 **during the hearing, not necessarily a**  
 2 **re-issuance. It's not going to impact the**  
 3 **results. That's my logic.**  
 4 Q. Okay. And you would also, at least, acknowledge  
 5 that there were errors identified in table 2-10  
 6 in the previous hearing. Is that -- is that  
 7 also an accurate statement?  
 8 **A. Was that the one with the proposed levels, just**  
 9 **to speed things up?**  
 10 Q. It's on page 2-24 just to refresh your memory,  
 11 it had to do with errors in the contingencies.  
 12 **A. Okay, yeah, I think we had cleanup on that too.**  
 13 Q. Okay. So at least for my purposes, at the last  
 14 hearing back in December, those three days of  
 15 hearing back in December, for the first time for  
 16 all of our benefit, these errors were  
 17 acknowledged and identified by the City for the  
 18 first time during those previous three days of  
 19 hearings, so my question is we've had, you know,  
 20 a couple months of time that's elapsed since our  
 21 last hearing, have any additional errors or  
 22 aspects of your proposal that you wish you would  
 23 have changed or modified, has anything  
 24 additional come to your attention?  
 25 **A. Not that I know of.**

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1 Q. And if I asked you this, I apologize, but what  
 2 peer-review work was done with respect to the  
 3 modeling work performed by Burns & Mac?  
 4 **A. So we -- we have a QA/QC process, it's a formal**  
 5 **QA/QC process that goes through a digital**  
 6 **checklist, digital sign-offs. It's generally an**  
 7 **individual who may be familiar with, let's say,**  
 8 **the report or the project but did not write it**  
 9 **himself. So that person would have been Luca**  
 10 **DeAngelis, as he testified, was the QA/QC for**  
 11 **this. And so he QA/QC'd the general concepts,**  
 12 **such as are we using appropriate drought values,**  
 13 **are -- is pumping represented, is the model**  
 14 **being used for its intended purpose, general**  
 15 **spitballing of ideas. So that is QA/QC and who**  
 16 **did it, and it was a process that we had done.**  
 17 I will say if it's value to either the  
 18 hearing process, the hearing officer, or the  
 19 process in general, if you would like an  
 20 addendum that would be issued with any  
 21 corrections that we've identified to be -- that  
 22 we believe are accurate corrections, we could do  
 23 that. If there is value to the hearing process,  
 24 we'd be more than glad to do that.  
 25 Q. So during that peer-review process, did

1 Mr. DeAngelis, did he catch any errors in the  
 2 tables or in the modeling during that process?  
 3 **A. Not that I recall. I believe we added**  
 4 **streamflows and a couple other things just to be**  
 5 **more illustrative, just to speak more model**  
 6 **terms, knowing that others might want to review**  
 7 **the modeling aspects of it, not so much the**  
 8 **individual proposal pieces and tables but more**  
 9 **if another modeler wanted to take a dive into**  
 10 **it, just we had all the data represented. But**  
 11 **in general, no, I mean, that was it.**

12 Q. Was there other work done trying to assure that  
 13 errors would be eliminated in the modeling?

14 **A. I mean, Word, spell check, and stuff like that,**  
 15 **sure. But, I mean, it's just, it's a general**  
 16 **gut check on the roles of the model, the**  
 17 **capacity of the model to simulate what you're**  
 18 **asking it to simulate, the drought values that**  
 19 **were presented, I mean, general QA/QC.**

20 **PRESIDING OFFICER:** Could I ask --  
 21 sorry, I'm still working my way through all  
 22 this, and this may be a very oversimplified  
 23 view of things, as I'm looking at table  
 24 2-5, what it appears to me, if I understand  
 25 what you were saying, the row for total

1 Equus Beds and ASR, plus Cheney Reservoir  
 2 pumping equals the bottom row?

3 **A. I believe that's what's -- should be represented**  
 4 **there.**

5 **PRESIDING OFFICER:** So in order to  
 6 derive the total Equus Beds and ASR  
 7 pumping, the years 2011 and 2012 are used  
 8 for that? But for Cheney Reservoir, the  
 9 other data derived by Winchester and others  
 10 was used for that?

11 **A. No. So the demands, the total Equus Beds well**  
 12 **field and ASR, that particular row, those demand**  
 13 **numbers come from the basis for those numbers.**  
 14 **How do we know that we need 34,000 specifically**  
 15 **from the Equus Beds, those come from the MODSIM**  
 16 **model. Those values are put into the Equus Beds**  
 17 **model, so they are represented in the model, and**  
 18 **the other hydrologic things that are in the**  
 19 **Equus Beds model are repeated at 2011 and 2012**  
 20 **values.**

21 **PRESIDING OFFICER:** So one question  
 22 I have, and I was taking notes while you  
 23 were describing this a minute ago so I'm  
 24 sorry to go back, but in year five, you  
 25 identified or discussed an error that was

1 in this table. Can you remind me what that  
 2 error was and what the proper value should  
 3 be?

4 **A. I believe that in model stress period year five,**  
 5 **if we look at the total Equus Beds well field**  
 6 **and ASR acre-feet, that row, and go over to**  
 7 **stress period five, that number is 56,579. The**  
 8 **City's base water rights total 40,000 acre-feet.**  
 9 **So if we go underneath that, that value, we see**  
 10 **the row City of Wichita ASR credit pumping, that**  
 11 **value should be corrected. It's simply just a**  
 12 **math error, maybe a carry-over from a previous**  
 13 **model, MODSIM-DSS run. It looks like that value**  
 14 **should be 16,579 because that would be in**  
 15 **addition to the City's base water rights. So if**  
 16 **you can pump 40,000 acre-feet first, which would**  
 17 **make sense, you'd be left with 16,579 acre-feet**  
 18 **of demand that you would still need to get from**  
 19 **the ASR credits.**

20 **PRESIDING OFFICER:** But then why  
 21 wouldn't you apply that to the years before  
 22 that?

23 **A. So that -- that still follows. So if we look**  
 24 **at -- let's just go through it line by line real**  
 25 **quick. So in stress period one, in year one,**

1 **the total demand assigned to the Equus Beds**  
 2 **model, at least from the City's standpoint,**  
 3 **comes from MODSIM, that number is 34,202. The**  
 4 **City can take care of that with its base water**  
 5 **rights of 40,000 acre-feet so no -- no demand**  
 6 **from the ASR credits.**

7 **But the next year, we see 45,651 acre-feet**  
 8 **of demand from the MODSIM model, so we simulate**  
 9 **45,651 within the Equus Beds model, but the**  
 10 **City's water rights are only 40,000 acre-feet,**  
 11 **so they need 5,651 from ASR credits. So that**  
 12 **should follow that those two lines, the white**  
 13 **City of Wichita ASR credit pumping acre-feet**  
 14 **should be the delta between 40,000 acre-feet and**  
 15 **the line above it.**

16 **PRESIDING OFFICER:** So the  
 17 correction is not from the 56,579, the  
 18 correction should be the number below that?

19 **A. That's correct, yes.**

20 **PRESIDING OFFICER:** Okay. Now it  
 21 makes sense.

22 **A. Okay.**

23 **PRESIDING OFFICER:** Thank you, sorry  
 24 to interrupt.

25 **BY MR. STUCKY:**

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1 Q. You mentioned that Cheney, you assumed, would  
 2 start at 100 percent full from the modeling that  
 3 you performed, but with respect to the aquifer  
 4 itself, we were going to start at the 1998  
 5 levels which is -- makes the aquifer at 91  
 6 percent full. Is that a true statement?  
 7 **A. I don't know about the 91 percent off the top of**  
 8 **my head, but the 1998 was the starting condition**  
 9 **of the model, so that would be accurate.**  
 10 Q. So my question is for the modeling that you  
 11 performed with respect to the Equus Beds, why  
 12 were the 1998 levels selected versus assuming  
 13 that the aquifer would be 100 percent full when  
 14 the modeling started or the drought started?  
 15 **A. Well, from a standpoint of what is a reasonable**  
 16 **bottom for the project, if AMCs don't happen,**  
 17 **which I think could be reasonably assumed, we've**  
 18 **had opposition to that, if that does not happen,**  
 19 **still the reasonable bottom for the project,**  
 20 **regardless, is starting at some level that**  
 21 **facilitates, at least, the physical recharge**  
 22 **capacity of the system. So that was targeted at**  
 23 **roughly 30 million gallons a day of physical**  
 24 **recharge capacity at 1998 levels.**  
 25 **The problem with pumping the aquifer down**

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1 **to essentially recharge it is that you have to**  
 2 **over-excavate, it is not a one-to-one number.**  
 3 **So I believe that value was provided by the**  
 4 **City, we think based on 1998 levels that we can**  
 5 **roughly inject 30 million gallons a day of**  
 6 **sustained capacity to build the necessary**  
 7 **recharge credits available for drought. That is**  
 8 **why we started the model at 1998 conditions.**  
 9 **Also we see over time the aquifer has gone**  
 10 **up and down, so we wanted to have a bottom that**  
 11 **was representative of potentially dry**  
 12 **conditions. Just because you start at 1 percent**  
 13 **drought doesn't mean that it's going to be right**  
 14 **after a wet hydrologic period.**  
 15 **The goal of this entire proposal is to**  
 16 **facilitate aquifer levels at higher levels at**  
 17 **all times except for when it's needed, you're**  
 18 **pumping during drought, but we started the model**  
 19 **at 1998 conditions just to establish if we had**  
 20 **to continue recharging at 30 million gallons a**  
 21 **day, what would that number be so ...**  
 22 Q. So did you do a different modeling or different  
 23 modeled results for the aquifer at 100 percent  
 24 full versus, let's say, 91 percent full with the  
 25 1998 levels, did you do different modeling?

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1 **A. No.**  
 2 Q. Would it change the modeled results if you  
 3 assume that the aquifer started at 100 percent  
 4 full versus 91 percent full with the 1998  
 5 levels?  
 6 **A. Well, first of all, two things from the**  
 7 **perspective, you know, we'll never be at 100**  
 8 **percent full unless everyone stops pumping;**  
 9 **that's predevelopment, so that's probably not**  
 10 **going to happen. But from the perspective of**  
 11 **what was a reasonable bottom for the project**  
 12 **that assures that we understand the project can**  
 13 **function as needed, as it was designed, provide**  
 14 **drought resiliency for the City, and hopefully**  
 15 **not have to go through another hearing process**  
 16 **for the role of the project, it was prudent to**  
 17 **start with lower conditions rather than higher**  
 18 **conditions.**  
 19 **Again, the goal of the project, both**  
 20 **proposals here is to actually raise water**  
 21 **levels, maintain water levels higher, but from a**  
 22 **planning standpoint, it is much more**  
 23 **conservative to say the value of a very**  
 24 **expensive project, the value of the City's water**  
 25 **supply from a planning standpoint, from a**

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1 **hydrologist standpoint, from a groundwater --**  
 2 **from a geology standpoint, where have we been,**  
 3 **where have we seen water levels be, 1998, we**  
 4 **felt like, was a reasonable number to start**  
 5 **with.**  
 6 Q. So at least to answer my question, if we were to  
 7 assume that the aquifer was 100 percent full and  
 8 we did the modeling based on the aquifer being  
 9 100 percent full versus the 1998 levels, that  
 10 would impact or change the outcome of the  
 11 modeling. Is that a true statement?  
 12 **A. Sure, if you -- if you start water levels**  
 13 **higher, it's logical to assume that you'll end**  
 14 **with water levels higher as well.**  
 15 Q. In order to accumulate -- okay. So with the  
 16 City's proposal, there's a difference between  
 17 accumulating an aquifer maintenance credit on  
 18 one hand and physical recharge on the other  
 19 hand. Is that a true statement?  
 20 **A. Can you rephrase the question? And I'm going to**  
 21 **try and answer it for you, can you rephrase that**  
 22 **one more time?**  
 23 Q. Under the City's proposal, there is both the  
 24 physical recharge credit where water is injected  
 25 into the aquifer first on one hand, and on the

1 other hand, there's this aquifer maintenance  
2 credit where water is sent to the City and these  
3 aquifer maintenance credits are accumulated. In  
4 a very simplistic sense, would you agree there's  
5 a distinction between those two made in the  
6 City's proposal?

7 **A. Yeah, sure.**

8 Q. My question is this, what percent full under the  
9 City -- under the City's proposal does the  
10 aquifer need to be before an aquifer maintenance  
11 credit can be accumulated?

12 **A. I mean, in theory, it would roughly correlate, I  
13 believe, to the 1998 levels. I mean, at the  
14 point where you don't have physical recharge  
15 capacity to put it in the ground, there -- we  
16 can replace water that would otherwise not be  
17 pumped by taking that water to town. I would  
18 say if it is less than -- and we kind of took a  
19 shot at this in the operations plan, I mean, we  
20 have, I believe it was 34 MGD of recharge  
21 capacity. I -- we have a 30 MGD water treatment  
22 plant, if we can put it all in the ground, let's  
23 put it all in the ground. I think that is what  
24 the City is intending to do.**

25 **The problem is is under the majority of**

1 **water level conditions when things are shallow,  
2 we don't have that recharge capacity, so that  
3 would be the occurrence when the City would gain  
4 an AMC under the proposal is when we just simply  
5 don't have the physical recharge capacity in the  
6 existing system to do it.**

7 Q. Okay. So just in a simplistic sense for my  
8 understanding, if we go below the 1998 levels,  
9 we can have physical recharge, but if it's at  
10 the 1998 levels or higher, then the City would  
11 accumulate aquifer maintenance credits, is that  
12 what you're saying?

13 **A. Roughly. I mean, that's -- I think 1998 levels  
14 would correlate roughly with 30 MGD. Anything  
15 above that, we're going to start seeing decline  
16 capacity. I think the City has indicated they  
17 will, with all their effort, be able to try and  
18 put it in the ground, I mean, that is the  
19 number one priority of the City is to try and  
20 physically inject it. If the capacity of the  
21 system will simply not support that physical  
22 recharge activity due to water levels, that  
23 water needs to go somewhere. Again, the plant  
24 operates at either 15 million gallons a day or  
25 30 million gallons a day. It is still a benefit**

1 rewarded with a minimum index water level  
2 elevation at which they could pump credits, is  
3 that what you're saying?

4 **A. I don't know about rewarded. I mean, we have a  
5 world-class ASR project that we have the  
6 privilege to use here within Harvey County and  
7 Sedgwick County. We are at the forefront of ASR  
8 in terms of the Midwest, that is a excellent  
9 thing for the State of Kansas, for the City of  
10 Wichita, for every user here in the aquifer. I  
11 wouldn't say that it's a reward to get a lower  
12 elevation. I think what today is about, what  
13 this whole hearing process has been about is  
14 what is a reasonable bottom so that the project  
15 can be managed in a way that is beneficial to  
16 not just the City but everyone.**

17 **And then the other part of your question --  
18 what was the other part of your question?**  
19 Q. Well, in other words, would the City purposely  
20 pump the aquifer down during normal years and  
21 then pump it even lower in drought years under  
22 this proposal?  
23 **A. Right now we don't have an alternative if you're  
24 the City. I don't want to speak for the City, I  
25 think Don and Joe kind of touched on this, the**

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1 **problem with the way the existing permit**  
 2 **conditions are written, which is the genesis of**  
 3 **the proposal, let's try and do the right thing,**  
 4 **please don't force us -- right now the City has**  
 5 **to make ASR credits to have an additional**  
 6 **resource during drought. The role of ASR is**  
 7 **strictly for drought at this purpose and**  
 8 **currently with policy.**  
 9 **So relative to the ability to establish**  
 10 **those recharge credits, that is incredibly**  
 11 **important for the City in terms of drought**  
 12 **planning. We simply can't do it by maintaining**  
 13 **water levels where we're at at 97, 98 percent**  
 14 **full. Water levels have to go down in order for**  
 15 **us to establish physical recharge credits.**  
 16 **We just talked about the infrastructure**  
 17 **that governs that and from an engineering**  
 18 **standpoint how that works. So in order to lower**  
 19 **water levels, the City could, under its existing**  
 20 **rights, pump water levels down to make room, to**  
 21 **make storage space, to make recharge capacity**  
 22 **for those credits. This proposal is about not**  
 23 **having to do that, about coming up with a better**  
 24 **approach that we think will actually maintain**  
 25 **things fuller, except for those 1 percent**

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1 **drought occurrences where it's most needed.**  
 2 Q. So if we were to start the modeling with the  
 3 aquifer 100 percent full and you were to do the  
 4 modeling with the aquifer 100 percent full  
 5 versus the 1998 levels, would you at least agree  
 6 with me, if you were to redo the modeling with  
 7 the aquifer 100 percent full, that those minimum  
 8 index levels would be affected less soon if you  
 9 assume the aquifer was 100 percent full versus  
 10 the 1998 levels?  
 11 **A. Sure. Just to answer your question, and I think**  
 12 **I tried earlier, maybe I did, but if you start**  
 13 **at a higher groundwater elevation and apply the**  
 14 **same demands, let's say, to the aquifer, you**  
 15 **should end at a higher groundwater elevation,**  
 16 **that is logical, yes.**  
 17 Q. I think in your previous testimony when  
 18 Mr. McLeod was asking you questions, I think you  
 19 may have indicated that Mr. McCormick was better  
 20 qualified to testify as to the 30 MGD and how  
 21 that was selected. Was that what you previously  
 22 testified to?  
 23 **A. Not the 30 MGD. I believe you're talking -- go**  
 24 **ahead and ask your question one more time, make**  
 25 **sure I can try and answer it.**

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1 Q. Well, it's stated in the report that the 1998  
 2 groundwater levels are the minimum groundwater  
 3 levels to maintain 30 MGD, a physical ASR  
 4 recharge capacity. Is that -- is that what's  
 5 stated in the report?  
 6 **A. Yeah, and that was done -- basically, the City**  
 7 **reviewed and said, where do we think, based on**  
 8 **our existing infrastructure and what we know**  
 9 **about the wells, where do we think we could**  
 10 **sustainably inject that quantity, and that**  
 11 **starts at roughly the 1998 levels.**  
 12 Q. And I think, and I can flip to the page in your  
 13 previous testimony, I think you indicated that  
 14 Mr. McCormick had done more of the research with  
 15 respect to that. Is that -- is that what you  
 16 previously testified to?  
 17 **A. I don't -- I don't know that he -- I don't know**  
 18 **that I would have referred Mr. McCormick to that**  
 19 **specific piece of the project. I probably would**  
 20 **have referred to Mr. McCormick in the aspects of**  
 21 **the accounting process. We can go back and**  
 22 **revisit that if you'd like. I mean, certainly**  
 23 **he has knowledge of the ASR wells, how they**  
 24 **operate, kind of the same thing that I do**  
 25 **but ...**

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1 Q. I'm finding a particular page of the transcript  
 2 to help me clarify this. I'll find that later.  
 3 Did you -- would you also agree that  
 4 Mr. McCormick is the expert that would be  
 5 qualified to talk about the accounting approach  
 6 here?  
 7 **A. Sure, he's -- he's done the ASR accounting**  
 8 **report for the last multiple years so ...**  
 9 Q. And I think you also indicated that as far as  
 10 knowledge on the accounting that that was his  
 11 expertise and not yours; is that right?  
 12 **A. I -- I have assisted with development with, say,**  
 13 **the pumping files and some of the river files**  
 14 **associated with the groundwater modeling that**  
 15 **goes into the accounting report, but certainly**  
 16 **Paul is the main author of the accounting**  
 17 **report, so he would probably be best, if you had**  
 18 **specific details about how accounting was done,**  
 19 **he'd probably be best to answer that.**  
 20 Q. So do you have an opinion, then, on why the 1998  
 21 levels were used to determine that -- that 30  
 22 MGD of physical ASR recharge capacity existed,  
 23 could you explain to me the interrelation  
 24 between those concepts?  
 25 **A. I think we looked at original design capacity.**

1 This is -- I don't think we did a report or  
 2 anything, I think this was sitting down and  
 3 looking at original design capacity. If you  
 4 recall, Phase II was originally designed as not  
 5 a year-to-year resource but almost a daily  
 6 resource where peak demands were going to come  
 7 from ASR credits. So not drought purpose, while  
 8 drought was one of the purposes, but almost on a  
 9 daily source of supply. So cycling of water  
 10 levels down to that level was originally  
 11 envisioned by at least part of the engineering  
 12 design. Do I think 1998 levels are reasonable  
 13 for sustained recharge of roughly 30 MGD when  
 14 the intermittent periods of the river allow?  
 15 Sure.  
 16 Q. The concept of aquifer maintenance credits, do  
 17 you know who actually developed or came up with  
 18 that concept?  
 19 A. I -- I don't off the top of my head.  
 20 Q. Now, correct me if I'm wrong, but I think that  
 21 there was an informational meeting, and there's  
 22 a video of this on the Division of Water  
 23 Resources' website if you needed to refresh your  
 24 memory, but I think there was an informational  
 25 meeting with respect to aquifer maintenance

1 yourself?  
 2 A. No, unfortunately, I can't claim the idea for  
 3 conjunctive use or conjunctive water rights  
 4 management, no.  
 5 Q. Do you have much knowledge of Phase I and Phase  
 6 II of the City's proposals? Or in the past,  
 7 Phase I and Phase II of the City's water use?  
 8 A. Phase I water use?  
 9 Q. I'm sorry, with respect to artificial recharge,  
 10 Phase I and Phase II, are you an expert on what  
 11 historically happened with respect to Phase I  
 12 and Phase II and the ins and outs of that aspect  
 13 of the recharge?  
 14 A. You're going to have to give me more specifics  
 15 'cause Phase I and Phase II are big projects so  
 16 there's different pieces that I may or may not  
 17 be familiar with.  
 18 Q. Well, I'm just asking in general, are you aware  
 19 of any aspects of Phase I or Phase II, and is  
 20 that something that you're qualified to testify  
 21 to?  
 22 A. I'm very familiar with the -- both ASR Phase I  
 23 and ASR Phase II. In general, I'm familiar with  
 24 a good portion of the water rights permits of  
 25 Phase I and Phase II, some of the permit

1 credits, and you said, quote, that you were the  
 2 brains behind the technical components, end  
 3 quote.  
 4 A. Yeah, you bet. So I said that in an effort to  
 5 make sure we had an adequate public engagement  
 6 and that folks knew I was the one that was going  
 7 to be able to speak to things like what does a  
 8 model do, what is it made out of, things of that  
 9 nature.  
 10 And relative to AMCs, I mean, AMCs are not  
 11 that different from conjunctive use. I mean, I  
 12 don't know where the original genesis of the  
 13 idea came up for, hey, we have an opportunity to  
 14 take this to town, other than that's what the  
 15 City's been forced to do recently because we  
 16 don't have the physical recharge capacity. But,  
 17 I mean, it's not outside the ideas of other  
 18 western water states that do things like  
 19 conjunctive use, what is the opportunity to make  
 20 sure we use a transient resource to the best of  
 21 our availability? Conjunctive use.  
 22 Q. So when you said you were the brains behind the  
 23 technical components of the City's proposal,  
 24 that wasn't an indication that you had actually  
 25 developed the aquifer maintenance credit concept

1 limitations, certainly how ASR works from  
 2 coordinating with the City on operations, so  
 3 where water goes, where it can't go, pipeline  
 4 constriction, things of that nature. Hopefully,  
 5 that clears up what I, you know, have experience  
 6 with and not with.  
 7 Q. I'll ask you a specific question then. During  
 8 ASR Phase I and Phase II and the transcripts  
 9 that developed out of ASR Phase I and Phase II  
 10 and the permit conditions, there was the concept  
 11 of passive recharge credits that was identified,  
 12 is that -- is that true, do you -- does that  
 13 terminology ring a bell?  
 14 A. Sure.  
 15 Q. And can you explain for the record what a  
 16 passive recharge credit is?  
 17 A. While there is not a definition, I believe at  
 18 the time the passive recharge credit was  
 19 referring to use of Cheney in lieu of, and that  
 20 is one term that is commonly used  
 21 interchangeably, basically, with conjunctive  
 22 use, so use of Cheney in lieu of Equus Beds  
 23 groundwater, I think that was the term that was  
 24 dubbed at the time.  
 25 Q. And so the concept is that if the City chooses

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1 to use water out of Cheney versus the Equus Beds  
 2 well field, they shouldn't necessarily get  
 3 credit for that, for that decision to use Cheney  
 4 versus the Equus Beds well field. Is that the  
 5 concept of a passive recharge credit?  
 6 **A. I think that was the determination and**  
 7 **discussion at the time. Again, I wasn't part of**  
 8 **those hearings, I wasn't present for the**  
 9 **permitting and that sort of thing, but reading,**  
 10 **that's my understanding in discussions with**  
 11 **others so ...**  
 12 Q. So if the City were to choose to withdraw water  
 13 from the Little Ark River versus the well field  
 14 and they asked for a credit for that, would that  
 15 also be a passive recharge credit?  
 16 **A. I don't think so. We have the unique**  
 17 **opportunity, what sets this project apart from**  
 18 **so many other conjunctive use type projects is**  
 19 **that there is a physical link now between the**  
 20 **aquifer and the Little Arkansas River. The City**  
 21 **has the capacity during elevated ground -- or**  
 22 **during elevated river flows to take that water**  
 23 **and put it into the aquifer, that is a physical**  
 24 **link between the two systems. So for that**  
 25 **reason, I don't believe it's identical to, let's**

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1 **say, an offset from Cheney use.**  
 2 Q. But if the City were to take water, let's say,  
 3 from El Dorado Reservoir instead of the well  
 4 field and ask for credit for that, would that be  
 5 considered a passive recharge credit?  
 6 **A. Under the definition that I just believe I**  
 7 **supplied, I think that would qualify as passive**  
 8 **or conjunctive use or in lieu of.**  
 9 Q. If the City were to choose to take water from  
 10 the E&S well field and the Bentley well field  
 11 versus from the aquifer and they asked for  
 12 credit from that, would that be considered a  
 13 passive recharge credit?  
 14 **A. Well, with the exception of Bentley, which is**  
 15 **also somewhat interrelated to the basin, local**  
 16 **well field is not obviously hydraulically tied,**  
 17 **it's downstream, so under that same concept, it**  
 18 **would be in lieu of because effectively the**  
 19 **local well field is very much supported by**  
 20 **surface water flows so ...**  
 21 Q. So focusing in specifically to the Little  
 22 Arkansas River, your rationale for why taking  
 23 water from the Little Arkansas River instead of  
 24 from the Equus Beds well field, why that's not  
 25 considered a passive recharge credit in that

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1 scenario is because there's such a significant  
 2 hydrological connection between the Little  
 3 Arkansas River and -- and the aquifer, is that  
 4 what your answer is?  
 5 **A. Not just hydrologic, physical. In this case, we**  
 6 **have infrastructure that relates the two, an**  
 7 **artificial infrastructure.**  
 8 Q. And tell me -- tell me how that physical  
 9 infrastructure influences your answer.  
 10 **A. Well, you have a link between the groundwater**  
 11 **levels and a surface water resource that is**  
 12 **artificially defined. So in this instance, if**  
 13 **we don't take water out of the system, that is**  
 14 **one way to ensure that the system achieves a**  
 15 **groundwater level rise.**  
 16 The other side of that is that we have  
 17 physical recharge capacity from the Little  
 18 Arkansas River that we can physically inject.  
 19 At the point where we can't physically inject it  
 20 based on our own water resources management  
 21 decisions, the City is the one who has  
 22 proverbially shot themselves in the foot  
 23 basically by keeping water levels full. That is  
 24 an excellent outcome. So from a physical  
 25 recharge standpoint, the reason we can't

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1 physically recharge is literally because the  
 2 City has made excellent management decisions.  
 3 So that's why it is different than conjunctive  
 4 use or in lieu of water in my opinion.  
 5 Q. So if there's a gallon of water and the Little  
 6 Arkansas River is flooding and we take a gallon  
 7 of water and we divert it to the City and a  
 8 aquifer maintenance credit is accumulated for  
 9 those gallons of water sent to the City, I guess  
 10 my question is would that water have otherwise  
 11 entered the aquifer?  
 12 **A. Probably not. So we see base flow mostly**  
 13 **discharging into the Little Arkansas River. In**  
 14 **other words, during full conditions of, let's --**  
 15 **let's say, the Little Ark River, temporarily we**  
 16 **have some bank storage, temporarily we see a**  
 17 **push of that water recharging into the Equus**  
 18 **Beds Aquifer. But when things go back the other**  
 19 **direction, obviously we're not under flood**  
 20 **conditions, we hope, all the time, when the**  
 21 **river goes back down, we see base flow go back**  
 22 **to the river.**  
 23 And under normal conditions, the Little  
 24 Arkansas River is receiving water from the Equus  
 25 Beds Aquifer so it gains. In other words, the



1 **groundwater from the Equus Beds is discharging**  
2 **into the Little Ark, not the other way around,**  
3 **for the majority of the time.**

4 Q. So if that is true that that gallon of water  
5 wouldn't otherwise go into the Equus Beds well  
6 field, the gallon of water that's sent directly  
7 to the City, if that's true, then why would that  
8 not be considered a passive recharge credit?

9 **A. In this instance, we have the unique ability to,**  
10 **again, use both the base water rights and the**  
11 **physical link between the system facilitates**  
12 **conjunctive use, not with another outside body,**  
13 **not with another outside reservoir, but we have**  
14 **a physical link between the two systems, that's**  
15 **what makes it different.**

16 **So pumping from, in this instance, a base**  
17 **water right and/or leaving that water in the**  
18 **ground from not pumping your base water rights**  
19 **and meeting the demand with water you take from**  
20 **the Little Arkansas River into town is different**  
21 **than simply using that water in lieu of, let's**  
22 **say, Cheney, or another hypothetical the -- any**  
23 **other reservoir that would be developed, E&S**  
24 **well field, something in that nature. It is the**  
25 **physical link that in my opinion makes that**

1 **within the model.**

2 Q. So if 2011 and 2012 were replicated over the  
3 course of eight years, I guess my question is  
4 in -- if 2011 was used in year one and 2011 is  
5 also used in year seven, would I be  
6 understanding it correctly that the streamflow,  
7 at least, for year one and year seven would be  
8 the same in the model -- modeling that was  
9 performed by Burns & Mac?

10 **A. Under that hypothetical that you just described,**  
11 **yes, if you just described them as equal, they**  
12 **would be equal.**

13 Q. Well, and my question is in -- in year one and  
14 year seven, in the modeling that you performed,  
15 were they equal, the streamflow?

16 **A. Sure, it looks like based on table 2-5, the**  
17 **streamflows of 2011 were in year one, and in**  
18 **year seven the streamflows were also simulated**  
19 **as those that would have been equivalent to year**  
20 **2011.**

21 Q. And so I guess my question is this: If we're in  
22 a drought and each year of the drought becomes  
23 more severe, my question is wouldn't streamflows  
24 be lower potentially in year seven of a drought  
25 than they would be in year one of a drought?

1 **different than what would typically be**  
2 **considered conjunctive use or passive recharge**  
3 **credits or in lieu of water.**

4 Q. I'll just move on. How does the model account  
5 for streamflow changes?

6 **A. The model has elevations that are set based on**  
7 **interpolations between stream gages. So in**  
8 **other words, the fall and the level, the**  
9 **elevation of the river is set in between**  
10 **streamflow gages. That is documented within**  
11 **USGS groundwater model report.**

12 Q. Does -- do the streamflows change during the  
13 different years of the drought?

14 **A. Yes.**

15 Q. And how so?

16 **A. Basically, during 2011, we had the interpolated**  
17 **stream -- or interpolated river elevations**  
18 **within the model for 2011 for the Arkansas**  
19 **River, for, I believe, the Little Arkansas, and**  
20 **I'm not sure if there's another one in there but**  
21 **I know those two are for sure. And then let's**  
22 **say for the other year that's simulated within**  
23 **the model, 2012, same thing, the interpolated**  
24 **flows that are observed -- actual observations**  
25 **from streamflow are interpolated and represented**

1 **A. They could, it's possible.**

2 Q. And so why -- did the City consider taking that  
3 into account or did Burns & Mac consider taking  
4 that into account in the modeling it performed?

5 **A. We did insofar that 2011 and 2012, if you look**  
6 **at the characteristics of flow, they are both**  
7 **very, very low flows. So they are drought**  
8 **flows, if you will. So they do represent**  
9 **extremely low flow conditions.**

10 Q. But just to paraphrase here, in year seven, the  
11 streamflow was the same in year seven as it was  
12 in year one in your modeling. My question is  
13 did you ever consider variable streamflows, in  
14 other words, the streamflow slowly decreases  
15 over the course of that eight years, did you  
16 consider ever modeling that?

17 **A. You could approach it that way. In this**  
18 **instance where we've kept all the other**  
19 **hydrologic variables the same, repeating 2011,**  
20 **2012, to go outside of that we would need**  
21 **additional justification. Again, our research**  
22 **and our look at what do we want to simulate in**  
23 **terms of river values was based on 2011 and**  
24 **2012, not just because it was a nice fit, okay,**  
25 **it's the same hydrologic year, but during the**

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1 drought -- even during the 1930s drought, we had  
 2 periods that were wetter than others, and so  
 3 some years things may have come back. So  
 4 sustained values at low, in this case 2011 and  
 5 2012, is still drought representative.  
 6 I would be worried if we were on the other  
 7 end of things and let's say we found a more  
 8 moderate drought year to repeat and we repeated  
 9 that sequentially and we didn't have enough  
 10 dryness in there. But from a planning  
 11 standpoint, 2011 and 2012, certainly very low  
 12 flow years for the majority of the period, that  
 13 represents drought.  
 14 Q. If it was an actual drought and we're in year  
 15 five or six, let's say, of the drought and the  
 16 rivers actually just dry up during five or six  
 17 of the drought, and I know the Little Arkansas  
 18 River did dry up, I think, in some past years,  
 19 so if the river were to actually dry up in,  
 20 let's say, years five or six, how would that  
 21 impact or skew the modeled results?  
 22 **A. If -- if the river were effectively zero flow**  
 23 **and -- let me think about this for a second. If**  
 24 **the river flows were effectively zero, we**  
 25 **basically would not have that inflow into the**

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1 aquifer, so the water levels would be lower than  
 2 what is currently envisioned under that  
 3 scenario. So wetter conditions/higher levels,  
 4 drier conditions/lower levels with respect to  
 5 river flows.  
 6 Q. So in other words, if one were to model -- if we  
 7 were to assume that river flow was lower, even  
 8 lower than what was modeled in years five and  
 9 six, let's say it was at zero flow, in other  
 10 words, would it be true that the impact to the  
 11 aquifer would be greater if we were to model for  
 12 lower river flows --  
 13 **A. Yeah.**  
 14 Q. -- in the modeling?  
 15 **A. Sure.**  
 16 Q. Have you had occasion to read -- or you were in  
 17 the room, I believe, when Dr. Akhbari testified;  
 18 is that -- is that true?  
 19 **A. I was present, yeah.**  
 20 Q. Okay. And did you have occasion also to read  
 21 his expert report?  
 22 **A. Some of it, yeah, sure.**  
 23 Q. With regard to his expert report and his  
 24 testimony, do you agree with his statement that  
 25 the model tends to underestimate groundwater

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1 elevations?  
 2 **A. I don't know that I would agree or disagree. I**  
 3 **would have to do my own analysis on that to**  
 4 **agree or disagree. In general, I believe his**  
 5 **testimony indicated that the model accurately**  
 6 **represented or covered water level changes. His**  
 7 **finding was that it net underreported; I don't**  
 8 **remember what the quantities and values were.**  
 9 **That's my recollection of his testimony.**  
 10 Q. So as far as the statement that the model tends  
 11 to underestimate groundwater elevations, you  
 12 haven't specifically studied that, and you're  
 13 not prepared to be asked a series of questions  
 14 regarding that; is that true?  
 15 **A. No, not -- I mean, I haven't -- I could review**  
 16 **his work, but I haven't reviewed it in detail**  
 17 **enough to ...**  
 18 **And I might ask for a quick break, if**  
 19 **that's okay, just for bathroom breaks for**  
 20 **everybody.**  
 21 **PRESIDING OFFICER:** Well, it is 10  
 22 after 12:00, so if this is a good time --  
 23 **MR. STUCKY:** Sure.  
 24 **PRESIDING OFFICER:** -- I'm totally  
 25 inclined to call a lunch break. So it's 10

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1 after 12:00, let's reconvene at 1:00.  
 2 Thank you.  
 3 (Thereupon, a lunch recess was  
 4 taken; whereupon the following was  
 5 had.)  
 6 **PRESIDING OFFICER:** Okay. We're now  
 7 back on record, it's 1:05. And I neglected  
 8 to say in my introductory comments that I'm  
 9 serving as the presiding officer, my name  
 10 is Constance C. Owen, and these proceedings  
 11 are taking place at the First Mennonite  
 12 Church of Halstead in Halstead, Kansas.  
 13 Having added that in, Mr. Stucky, you  
 14 may continue.  
 15 **BY MR. STUCKY:**  
 16 Q. Mr. Clement, could you turn to table 2-10 on  
 17 page 2-24 of the City's proposal?  
 18 **A. Okay.**  
 19 Q. With respect to IW01C, the very first index well  
 20 number shown on that table, the contingency  
 21 that -- the correct contingency, I believe, was  
 22 23 feet based on the testimony from -- from  
 23 previous; is that right?  
 24 **A. Looks like 23.42, I believe, yeah, 23.**  
 25 Q. Now, could you explain to me the scientific

1 basis for a contingency?  
2 **A. Sure. In engineering, in this case modeling,**  
3 **contingency is there to represent things that**  
4 **you may or may not know about or the precision**  
5 **of the math that you're using relative to the**  
6 **variables that you have in hand. So it is**  
7 **there, I believe we characterized it as a safety**  
8 **net to things that we may or may not have**  
9 **thought about, to things that are variables that**  
10 **would be out of our control or relative to the**  
11 **precision of those variables, that is what**  
12 **contingency is.**

13 Q. Now, on the second one, on the second well shown  
14 here, I think the correct contingency there was  
15 something like 20.52; is that right?

16 **A. That seems to be correct.**

17 Q. Now, if you would, could you flip to attachment  
18 I in the City's proposal? Okay. Are you on  
19 attachment I?

20 **A. Sure, yes.**

21 Q. Okay. And in attachment I, and I just -- just  
22 for lack of a better way to do this, I don't see  
23 a page number or anything, I'm going to hold up  
24 my notebook, and it shows the start of some  
25 hydrographs, and then prior to the start of

1 those hydrographs, there is a table that's  
2 shown.

3 **A. Yeah. Okay.**

4 Q. Are you on that particular page now?

5 **A. Sure.**

6 Q. On attachment I, what we show in this table is  
7 the -- for that same well that we just -- and  
8 keep your finger, and I should have said this to  
9 you, I kept my phone there, on table 2-10, for  
10 that very first well, IW01C, we also see that  
11 it's also shown or depicted in this table, is  
12 that right, that same well?

13 **A. Say that one more time.**

14 Q. The very first well that's shown in table 2-10,  
15 that's also depicted in this table that I --  
16 that I pulled you to in attachment I; is that  
17 correct?

18 **A. The index site is represented. I will note for**  
19 **the record that it looks like on table 2-10 IW1C**  
20 **is represented because we are talking about the**  
21 **lower index levels, which the current index**  
22 **levels are based on the lower aquifer elevation.**  
23 **And the table that we were just discussing as**  
24 **part of attachment I, this table is referenced**  
25 **to saturated thickness, so that entire interval**

1 **is saturated is basically what we're saying, so**  
2 **we're not representing a pressure at that**  
3 **location, we are representing a saturated**  
4 **thickness. So just as a note, they are**  
5 **effectively nearly the same throughout most of**  
6 **the well field; there are small differences**  
7 **between the upper and lower.**

8 **But that is what these two tables are**  
9 **representing, one is the sea level, or lower**  
10 **level aquifer; the other one is the upper. And**  
11 **then the attachment I table I'm looking at**  
12 **represents, it looks like, saturated thickness.**  
13 **They are near the same location, usually feet**  
14 **apart, if I recall the location of those index**  
15 **wells.**

16 Q. So table 2-10 is showing the relevant  
17 contingencies, and this table in attachment I,  
18 what this shows to us is the change in the  
19 saturated thickness over the course of the  
20 modeling; is that right?

21 **A. That is correct.**

22 Q. Okay. So just as far as the correlation, IW01A,  
23 would that be the same monitoring site or the  
24 same index well site as what's shown as IW01C in  
25 table 2-10?

1 **A. They are effectively the same site, they --**  
2 **again, there is a lower monitoring well and a**  
3 **upper monitoring well.**

4 Q. Uh-huh.

5 **A. They are generally within feet of one another,**  
6 **they are very close.**

7 Q. So with respect to IW01A, if we look at the  
8 initial condition of the aquifer when we start  
9 in IW01A, would we agree that the saturated  
10 thickness of the aquifer shown there is  
11 84 percent in the initial condition?

12 **A. Yes.**

13 Q. And would you also agree that in year eight, the  
14 saturated thickness is then 79 percent in -- in  
15 year eight; is that true?

16 **A. In the table that is what it says, yes.**

17 Q. And so the difference between 84 percent and  
18 79 percent, that would be a 5 percent  
19 difference; is that right? If we just strictly  
20 subtracted 80 -- 79 from 84, that would be 5; is  
21 that right?

22 **A. Sure.**

23 Q. Now, in table 2-10, if we flip back to table  
24 2-10, and we keep our finger also on the spot in  
25 attachment I, if you were to look at well

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1 number 2, index well number 2, we decided that  
 2 the contingency that was added there was  
 3 20.52 feet. And if we go back to attachment I,  
 4 to that table, would you agree with me that we  
 5 could match up that same index well site to  
 6 what's depicted as IW02A on this attachment I?  
 7 **A. Sure.**  
 8 Q. And in IW02A, it says the initial aquifer  
 9 condition is at 88 percent, and then at the end  
 10 of the eight years of modeling, it's at 85  
 11 percent; is that right?  
 12 **A. That is correct.**  
 13 Q. And so if we were just numerically to subtract  
 14 those two numbers, the difference between 85  
 15 percent and 88 percent, if we just subtracted  
 16 those two numbers, we wind up with 3 percent; is  
 17 that right?  
 18 **A. That is correct.**  
 19 Q. So I guess my question is, then, if -- if that's  
 20 true, why do we need a 23-foot contingency with  
 21 respect to index cell 1 and a 20-foot  
 22 contingency with respect to index cell number 2,  
 23 if actually the reduction in the saturated  
 24 thickness is much less?  
 25 **A. So I believe those two wells are located up in**

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1 **the Sand Hills, and during discussions with the**  
 2 **person who was modeling, we looked at how water**  
 3 **level fluctuations occur in that particular**  
 4 **area. We do see some larger swings. Again, I**  
 5 **don't believe there is ASR infrastructure, but**  
 6 **if we wanted to both physically inject or**  
 7 **recover, we added those large swings in terms of**  
 8 **contingency. So that was the purpose of the**  
 9 **larger contingency relative to the rest of the**  
 10 **model, or the rest of the results.**  
 11 Q. Do you know what the average drop was in the  
 12 aquifer levels for the entire basin during the  
 13 eight years of modeling from -- from the very  
 14 beginning to the end of the eight years of  
 15 modeling?  
 16 **A. I believe that was provided as a statistic, I**  
 17 **can see if I can find that in the report for**  
 18 **you.**  
 19 Q. Okay.  
 20 **A. It looks like based on table 2-9, we had an**  
 21 **average water level drop of roughly 8.2 feet**  
 22 **across the entire basin storage area as a**  
 23 **geographic average.**  
 24 Q. That's what I also had in my notes that you had  
 25 put in the proposal. So if that is true that

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1 the average drop was 8 foot versus 10 foot,  
 2 why would we need a contingency of 10 feet  
 3 versus 20 feet versus 23 feet, why would we  
 4 need -- is the 10 -- is the entire contingency  
 5 numbers, are they too liberal, if you will?  
 6 **A. I don't think so, I think I just answered the**  
 7 **question previously so I will try and answer it**  
 8 **again. That particular area where IW1 and IW2**  
 9 **are is located in the Sand Hills region. That**  
 10 **area experiences some very high water level**  
 11 **swings relative to the rest of the basin storage**  
 12 **area, so that would mean that it would be**  
 13 **logical to apply additional contingency to those**  
 14 **areas. If you see water level fluctuations that**  
 15 **are greater than the rest of the basin storage**  
 16 **area relative to the same stress, it's logical**  
 17 **to apply additional contingency to those areas.**  
 18 **That is the source of the additional**  
 19 **contingency.**  
 20 Q. You indicated that after -- after eight years of  
 21 drought, at least with respect to index well 1,  
 22 the predevelopment aquifer thickness remaining  
 23 goes down by about 5 percent. Does that -- is  
 24 that right?  
 25 **A. Relative to what area?**

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1 Q. Index well 1, from the start of the drought till  
 2 the end of the drought?  
 3 **A. I believe that was accurate.**  
 4 Q. But your proposed level in your -- in the -- in  
 5 your proposal, doesn't that result in an aquifer  
 6 thickness that is 12 percent lower than what, in  
 7 fact, the modeling shows?  
 8 **A. Well, yeah, we're talking about two different**  
 9 **things. We're talking about ending conditions**  
 10 **based on the model and then proposed conditions,**  
 11 **those are two different things. So, remember,**  
 12 **we just talked about contingency was added to**  
 13 **the end of the models so those would be**  
 14 **different.**  
 15 Q. And so I guess my question is, then, if we look  
 16 at the difference between this contingency  
 17 added, without the contingency added, why -- why  
 18 do we have to have such a vast difference? In  
 19 other words, you know, a vast difference in the  
 20 saturated thickness or the difference in the  
 21 saturated thickness with this contingency added?  
 22 **A. So I'm going to go for this one more time. The**  
 23 **area of the Sand Hills that comprises the index**  
 24 **cells for, I believe, 1 and 2 lies within the**  
 25 **Sand Hills region. That area up there is maybe**

1 possibly defined as semi-confined, and there are  
2 also portions out there in the Sand Hills where  
3 you have perched water table. It is a complex  
4 environment, and we see, from my knowledge of  
5 that area, water level changes that are in  
6 greater magnitude relative to the same amount of  
7 the stress within the basin storage area. So,  
8 therefore, the contingency on how water levels  
9 change with respect to the possible error in the  
10 outcome of the results should be higher. That  
11 is just math.  
12 Q. So to make sure I understand this right, with  
13 index cell 1, we start with the 5 percent that's  
14 shown in that attachment I. I believe with  
15 index cell 1 you're adding a 12 percent  
16 contingency, and so that makes a total drop of  
17 17 percent, is that right, if I'm adding those  
18 numbers correctly?  
19 **A. I don't -- I don't think I followed. Try that**  
20 **one more time.**  
21 Q. What was shown in attachment I shows a 5 percent  
22 change --  
23 **A. Uh-huh.**  
24 Q. -- over the course of year zero to year eight.  
25 If you were to add a 12 percent contingency,

1 Again, relative to the importance of the  
2 hearing and the process, we don't currently have  
3 infrastructure, I don't believe, in those two  
4 cells. However, as we were going forward and  
5 putting forward appropriate bottoms for the  
6 project, we wanted to account for those large --  
7 larger water level swings in that area as a  
8 potential bottom. So that would be the reason  
9 for the additional contingency.  
10 To the numbers that you named off,  
11 percentages, specific percentages and the  
12 specific math, I may not be able to answer that  
13 today, but I can tell you the genesis clearly of  
14 those two numbers best I can to my knowledge.  
15 Q. Well, at least with respect to index well 1,  
16 would it be a true statement that the  
17 contingency is over double that of the modeled  
18 results with respect to the change in saturated  
19 thickness, would that be a true statement?  
20 **A. The contingency is double that of the typical**  
21 **contingency that is used throughout the rest of**  
22 **the model area, again for the same purpose that**  
23 **we see greater water level swings in that area**  
24 **in magnitude than we do in other places. It's**  
25 **not relevant to saturated thickness; it's simply**

1 which is what I think you're proposing to add,  
2 doesn't that drop it by 17 percent, the  
3 saturated thickness?  
4 **A. I'm afraid I'm not following on that. I think**  
5 **we're still talking apples and oranges here. I**  
6 **mean, what -- what the table in attachment I is**  
7 **showing is what is the result of the model. And**  
8 **those individual stress period years, those**  
9 **percentage values, I believe, are representative**  
10 **of what the index cell makes up in terms of**  
11 **whether the average saturated thickness of the**  
12 **geographic area of that index cell, and so that**  
13 **is the end -- let's say, stress period eight,**  
14 **that is essentially the end of the model run.**  
15 **And since we are not perfect people, I**  
16 **would love to think that I am a good modeler and**  
17 **take good science into account, even with all**  
18 **those elements, there is still an element of**  
19 **contingency, that's normal practice in**  
20 **engineering. So we wanted to add the**  
21 **appropriate amount of contingency relative to**  
22 **the water level changes that we see in that**  
23 **area, and we see greater magnitude in water**  
24 **level changes in that area than we do in other**  
25 **places of the aquifer.**

1 a function of the model results.  
2 So if we take the model results, in this  
3 case, they did not -- I'm looking at IW1 and  
4 IW2, it looks like IW2 dropped just slightly  
5 below the 1993 levels. And so our basis of  
6 saying what was an appropriate level for those  
7 two cells was slightly different than the rest  
8 of the basin storage area simply because we saw  
9 those larger water level swings in those areas.  
10 Q. So you don't -- you're not agreeing that the  
11 added contingency result in an extra 12 percent  
12 reduction in the saturated thickness for well 1?  
13 **A. I don't have the information in front of me to**  
14 **make sure that we're talking apples to apples,**  
15 **so I wouldn't be able to answer that question**  
16 **directly without making sure that I had the**  
17 **exact math right, you know, through explanation.**  
18 Q. Okay. I'll move on. Were you involved in  
19 determining the 120,000 foot -- or acre-foot cap  
20 that was included in the City's proposal, was  
21 that part of your brainchild for the City's  
22 proposal, or were you involved in coming up with  
23 that number?  
24 **A. Sure, I was involved in the proposal, yeah.**  
25 Q. Can you explain what the rationale was for

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1 choosing 120,000 acre-foot as far as the cap?  
 2 **A. Sure, and I believe others have talked --**  
 3 **touched on it as well. When the project, Phase**  
 4 **I, Phase II was envisioned, the delta between**  
 5 **the lowest levels generally that occurred within**  
 6 **the basin storage area, those levels were**  
 7 **observed during 1993. The delta between a full**  
 8 **condition, in other words predevelopment, and**  
 9 **that 1993 condition essentially adds the top,**  
 10 **you can't fill it any more than full.**  
 11 **In 1993 when the project was envisioned --**  
 12 **or at least the lower aquifer levels were**  
 13 **envisioned, that would represent a reasonable**  
 14 **low in terms of the available storage when the**  
 15 **project was envisioned, and so -- and then the**  
 16 **sides are certainly just the basin storage area.**  
 17 **So the genesis of that was taking the USGS**  
 18 **interpolated values for 1993, that specific**  
 19 **raster in their estimate of 120,000 acre-feet of**  
 20 **storage relative to predevelopment conditions,**  
 21 **that's where the 120,000 came up from.**  
 22 **Q. But if you flip to page 2-10 of the City's**  
 23 **proposal, which is included as table 2-5.**  
 24 **A. You said page 2-10 of the proposal?**  
 25 **Q. Yeah, 2-10 of the -- page 2-10 --**

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1 **A. Okay.**  
 2 **Q. -- table 2-5.**  
 3 **A. Okay.**  
 4 **Q. I believe that Mr. Pajor testified that during**  
 5 **this -- this model stress period of those eight**  
 6 **years, the City's use out of -- with respect to**  
 7 **pumping from ASR credits would be right around**  
 8 **50,000. Is that -- do you recall that**  
 9 **testimony?**  
 10 **A. Yeah, and I would -- I mean, if you wanted to**  
 11 **look at what the total demand was there, you**  
 12 **could add up those rows. I believe it's 58,000,**  
 13 **something on that order, but -- if I had a**  
 14 **calculator, I could do it, but, yeah, I mean,**  
 15 **50,000 versus 120,000, this is what we say we**  
 16 **think we need in year 2060 is that 50 to 60,000**  
 17 **number.**  
 18 **Q. Okay. So is your testimony today that the cap**  
 19 **should be closer to 50 or 60,000, is that your**  
 20 **testimony today, versus a cap of 120,000?**  
 21 **A. No. I don't see how accumulating more credits**  
 22 **would be necessarily a bad thing in excess of**  
 23 **the 60,000. Again, as much as we like to think**  
 24 **that we're perfect scientists and have**  
 25 **everything right, you know, 60,000, what if it's**

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1 **65,000? What if we set the cap at 60,000 when**  
 2 **all of a sudden we need in 2060 65,000, where is**  
 3 **that additional water going to come from, how**  
 4 **are we going to create that additional supply**  
 5 **for the City?**  
 6 **There is no cap that I know of now on the**  
 7 **amount of physical recharge credits. In early**  
 8 **discussions with the City, with the AMC concept**  
 9 **and both the physical recharge concept, there's**  
 10 **not currently a cap, but the proposal, we felt**  
 11 **like, might be beneficial with an included cap;**  
 12 **and that way there was an assurance that at some**  
 13 **point there is a cap to the total amount of AMCs**  
 14 **or physical recharge credits that could be**  
 15 **approved. Just so it wouldn't be infinite.**  
 16 **Q. Well, at least based on the modeled results,**  
 17 **would you agree that as far as what the City's**  
 18 **need is during an eight-year drought, just based**  
 19 **on your modeled results, would you agree that a**  
 20 **cap closer to 60,000 would be more consistent or**  
 21 **accurate based on the results that were modeled?**  
 22 **A. I don't know that it would be consistent or**  
 23 **accurate. Again, no one is perfect in their**  
 24 **predictions, we cannot predict the future.**  
 25 **Again, if we make the cap 60,000 acre-feet and**

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1 **we need 65,000 acre-feet, all of a sudden we're**  
 2 **back in another hearing process.**  
 3 **I think what would be more appropriate is**  
 4 **right now we don't have a cap. The City is**  
 5 **proposing an additional restriction, and I think**  
 6 **the 120,000 is -- is more than representative**  
 7 **and comes from an actual physical number that's**  
 8 **well established by an independent party, by**  
 9 **USGS, not by the City, not by a regulatory**  
 10 **agency, by the people that literally do**  
 11 **hydrogeologic and geologic investigations.**  
 12 **Q. A amount ago you said, I don't see the harm if**  
 13 **we have a cap at 120,000 acre-feet. If we raise**  
 14 **the cap from, let's say, 60,000 acre-feet to**  
 15 **120,000 acre-feet, do you follow me --**  
 16 **A. Uh-huh.**  
 17 **Q. -- for a moment?**  
 18 **A. Sure.**  
 19 **Q. If we raise that cap from 60,000 acre-feet to**  
 20 **120,000 acre-feet, who is that good for? Is**  
 21 **that good for the City, or is it good for the**  
 22 **health of the aquifer, which one?**  
 23 **A. Well, if, let's say, we actually accumulated**  
 24 **120,000 acre-feet, I mean, that is a huge**  
 25 **success for everyone, the City, the aquifer, the**

1 users of the aquifer, everyone, in my -- in my  
2 opinion. At that point, if we actually could  
3 accumulate 120,000 acre-feet of credits, the  
4 aquifer ought to be pretty darn full at that  
5 point. That is a win for everyone.

6 At the point where, let's say, we accrued  
7 120,000 acre-feet and in this instance say,  
8 well, we really only think we need 60,000  
9 acre-feet, the net impact of maintaining the  
10 aquifer full and only happen to use  
11 60,000 acre-feet is still the same, it's kind of  
12 moot at that point.

13 Q. What about at the time, let's say, when the  
14 120,000 acre-feet of credits versus the  
15 60,000 acre-feet in credits are removed or  
16 utilized and that water is taken from the  
17 aquifer, is it -- is it better at that point  
18 that the City has a 60,000 acre-foot cap or  
19 120,000 acre-foot cap? In other words, at the  
20 time when it's withdrawn, which is going to  
21 impact the aquifer more?

22 A. If you're asking me which would impact the  
23 aquifer more, pumping 60,000 acre-feet or  
24 120,000 acre-feet, the answer would be clear  
25 it'd be 120,000 acre-feet, with the caveat that

1 Q. So if we were to limit this cap to the  
2 infrastructure, for a logical connection between  
3 the cap and the infrastructure the City already  
4 has in place, do you know what that cap would  
5 be?

6 A. I don't. I mean, I know from a permitting  
7 standpoint right now, I believe the maximum  
8 number of credits that can be recovered in a  
9 given year is roughly 19,500. I don't know off  
10 the top of my head with all wells running 24/7,  
11 365 what that would look like. I don't think  
12 that's a anticipated, you know, event. That --  
13 that wouldn't occur all the time anyway just in  
14 normal demand practice but ...

15 Q. With your testimony today, are you suggesting  
16 that the City has the right to claim the aquifer  
17 storage space from 1993 to predevelopment  
18 levels?

19 A. No, I'm not, and that's -- that's more of a  
20 legal question. I just answered the question as  
21 the basis of the genesis for the -- the  
22 120,000 acre-feet cap, which is the 1993 levels,  
23 which were the lowest level, and then  
24 predevelopment conditions, which would be the  
25 fullest that the aquifer could ever get. That

1 I don't know that the City could pump 120,000  
2 acre-feet with their existing infrastructure if  
3 they tried, with the existing well  
4 infrastructure that was in the ground during the  
5 duration of eight -- eight years of drought.

6 Q. Well, normally, in water loss, you know, when we  
7 perfect and everything of that nature, we're  
8 based on -- our perfection and our water use is  
9 limited by the infrastructure we have in place.  
10 Is that generally a true statement?

11 A. To the extent that you would have in the example  
12 rate, a pumping well that gets certified by a  
13 rate and then, for example, if you're an  
14 irrigator, you might have a center pivot and  
15 that area that you irrigate is also part of the  
16 perfection, you get a certain number of acres  
17 that you're allotted, that is generally the  
18 relationship between infrastructure and the  
19 actual perfection, if you will.

20 Same thing with municipalities, the wells  
21 are certified for a rate, what they can actually  
22 produce or whatever the record was producing  
23 generally, and then from there you work into a  
24 net total or an individual total by well as the  
25 City grows, as -- as the demands increase.

1 represents the top and the bottom, and the sides  
2 consist of what is defined as a geographic area  
3 of the basin storage area; therefore, you have a  
4 total storage vessel that, at least, when the  
5 project was envisioned represents the net  
6 available storage, potentially, for the project.

7 Q. You mentioned the infrastructure the City has in  
8 place. Based on your knowledge of that  
9 infrastructure, can the City currently pump  
10 water out of the aquifer faster than it can  
11 recharge the aquifer?

12 A. Faster than naturally occurring or artificial?

13 Q. Artificial recharge?

14 A. Can they pump it out of the ground faster than  
15 they can recharge it?

16 Q. Yes, that's the question.

17 A. Absolutely, yeah.

18 Q. Previously, I asked the question about whether  
19 or not the City could put into place the  
20 infrastructure to both pump water out of the  
21 aquifer and to recharge the aquifer at the exact  
22 same time, and the answer to that question was  
23 yes, that hypothetically that could be done.

24 Have you made any recommendations to the City in  
25 that regard?

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1 **A. We've looked at that a little bit. It kind of**  
 2 **goes to the same argument that we were looking**  
 3 **at, if you remember the operations plan, the**  
 4 **draft operations plan, basically we're at a**  
 5 **point right now where we've got 30 MGD of**  
 6 **production capacity from water treatment plant,**  
 7 **and we've got more than 30 MGD in recharge**  
 8 **capacity in the well field. The issue is water**  
 9 **levels have raised within the well field due**  
 10 **largely to the City's management practices, and**  
 11 **so we're at a point where we have recharge wells**  
 12 **at essentially idle capacity already because of**  
 13 **the City's own management practices, which --**  
 14 **which is a great story to tell. Western Kansas**  
 15 **would love to be in the shoes that we are now.**  
 16 **So relative to new infrastructure,**  
 17 **additional recharge wells that would take very**  
 18 **little water or on the scale of what we already**  
 19 **have, more straws trying to inject, I wouldn't**  
 20 **necessarily recommend that. We already have**  
 21 **straws that can inject now. Adding additional**  
 22 **idle recharge capacity is probably not going to**  
 23 **help our issue. We're talking about ways we can**  
 24 **artificially manage, again, through the AMC**  
 25 **process or through the modification of the**

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1 **bottom -- bottoms of the index levels here to**  
 2 **create a system that works basically to the**  
 3 **benefit of, we think, everybody.**  
 4 **Q. And my question was if the City could recharge**  
 5 **and withdraw at the same time and let's say we**  
 6 **can make those numbers equal, at the same rate**  
 7 **that we're injecting into the aquifer, we're**  
 8 **pulling water out of the aquifer, if there was**  
 9 **infrastructure in place to do that, do you see**  
 10 **that as a benefit is my question?**  
 11 **A. You could try to do that. I don't know that it**  
 12 **would work, let's say if we're trying to take**  
 13 **out 20,000 acre-feet and trying to inject it at**  
 14 **the same time. Theoretically, I suppose you**  
 15 **could try and do that.**  
 16 **Q. What is -- just for the record, what is**  
 17 **saturated thickness?**  
 18 **A. It is the portion of the aquifer in this**  
 19 **instance that is saturated from -- if you go out**  
 20 **and take a water level in an unconfined system,**  
 21 **which we largely have here, it is the water**  
 22 **level, the saturated portion of the, hopefully,**  
 23 **sands down to in this instance the Equus Beds is**  
 24 **underlain by bedrock, shale, and the difference**  
 25 **between that water level and the bedrock is the**

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1 **saturated thickness of the aquifer.**  
 2 **Q. What's the difference between saturated**  
 3 **thickness and practical saturated thickness?**  
 4 **A. Practical saturated thickness would be a term**  
 5 **used if you had large clay units or something**  
 6 **that did not readily contribute to aquifer**  
 7 **storage or release from aquifer storage within**  
 8 **that interval. So in other words, if we had an**  
 9 **instance 7 -- or 100 foot of sand and we fill**  
 10 **that up with water and all the pore spaces in**  
 11 **that sand are filled up and it's 100 percent**  
 12 **saturated, we'd have 100 foot of saturated**  
 13 **thickness.**  
 14 **Now, if we have clay stringers within that,**  
 15 **we would subtract those potentially and call**  
 16 **that practical saturated thickness as those**  
 17 **clays don't readily yield water for, at least,**  
 18 **production purposes and supply purposes. So**  
 19 **when we look at installing a well or other**  
 20 **infrastructure, oftentimes that is a term that**  
 21 **is used. Yeah, you've got, as an example,**  
 22 **100 foot of saturated thickness, but only 50 of**  
 23 **that, as an example, would be sand, so we would**  
 24 **call the practical aquifer saturated thickness**  
 25 **50 feet rather than 100 feet.**

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1 **Q. Okay. I think I understand. So if we had**  
 2 **100 feet of bedrock and 100 feet of that was**  
 3 **purely sand, we would say that's 100 feet of**  
 4 **practical saturated thickness; is that right?**  
 5 **A. If that full interval was saturated, yes.**  
 6 **Q. And under the same scenario, if down 50 feet we**  
 7 **have 50 feet of sand and then after 50 feet we**  
 8 **have clay, clay layers before we get to the**  
 9 **bedrock, we would say, assuming the whole**  
 10 **portion is saturated, we would assume -- we**  
 11 **would say that that practical saturated**  
 12 **thickness is only 50 feet, right?**  
 13 **A. That would be -- yes, correct.**  
 14 **Q. Now I'd ask that you turn to table 2-9 --**  
 15 **A. Okay.**  
 16 **Q. -- on page 2-16 of the City's proposal. Now,**  
 17 **just to refresh just a moment, perhaps also for**  
 18 **the audience, what does table 2-9 depict?**  
 19 **A. So table 2-9, which is located on page 2-16, 2-9**  
 20 **says groundwater modeling results for the**  
 21 **1 percent drought simulation. So the first row**  
 22 **is just saying stress periods, so in other words**  
 23 **we're stepping through time here one year at a**  
 24 **time. The next row down is statistics for the**  
 25 **basin storage area, and that second row is the**



1 average water level change from starting  
2 condition. The next row down from that is the  
3 central well field storage area water level  
4 change from starting condition, and that is  
5 showing how water levels change geographically  
6 inside those different bounded areas of the  
7 basin storage area and central well field area  
8 through time.

9 The next two are the ASR basin storage area  
10 aquifer condition percent full. Again, people  
11 think of the aquifer in different ways. Some  
12 people think of it as depth of water, some  
13 people think of it as, well, how full is the  
14 aquifer. We tried to capture that in different  
15 ways in this table. And the ASR aquifer  
16 condition percent full, that is based on that  
17 saturated thickness relative to predevelopment.  
18 So in other words, before anybody was pumping  
19 the aquifer, basically things were 100 percent  
20 full; you can't get any fuller than when there's  
21 no stress on the system.

22 So we take that level, compared to the  
23 bedrock level relative to the basin storage area  
24 and come up with those percentages on a  
25 year-by-year basis. Same thing, same approach

1 here.

2 Q. So in other words, if we back up to what you  
3 stated before, if there were clay layers and  
4 things of that nature that allowed for the  
5 practical saturated thickness to be less, that  
6 wouldn't have been taken into account in this  
7 table. Is that a true statement?

8 A. Well, it doesn't list practical saturated  
9 thickness. From the standpoint that the model  
10 represents those changes, the K-values that are  
11 within the model represent things that are --  
12 let's say if we have a higher -- the ability of  
13 water to move through sands or any system, that  
14 is basically called hydraulic conductivity. The  
15 model uses this term and adjusts up and down for  
16 each cell or each group of cells what we think  
17 the hydraulic conductivity is, in other words  
18 how sandy it is, how clay-y is it, so we can  
19 adjust how water moves within the system.

20 From that standpoint, it is in here in  
21 terms of what we think the relative changes will  
22 be. But relative to the specific saturated  
23 thickness values that are here, we don't make  
24 any reductions for, let's say, at an index site  
25 or at a given geographic area what the practical

1 for the central well field storage area.

2 Q. So let's focus on the central well -- central  
3 well field storage area in that last line. It  
4 starts out at 90 percent in year one for the  
5 saturated thickness, and then in year eight, it  
6 changes to 86 percent. Is that -- is that a  
7 true statement as far as what that table shows?

8 A. Yes.

9 Q. So my question is do you know if the data and  
10 the well log data that was utilized to generate  
11 this table 2-9, do you know as you're sitting  
12 here today whether that took into account the  
13 practical saturated thickness of those well  
14 logs?

15 A. I do. So it would not have. The genesis of  
16 those percentages is, again, we took the bedrock  
17 elevation data that was in the USGS groundwater  
18 model and then the predicted heads from the USGS  
19 groundwater model for those specific geographic  
20 areas and then compared that to an interpolated  
21 water level surface that was provided by USGS in  
22 their initial studies to say, here's what  
23 absolute full looks like, and that's how those  
24 percentages were generated. So practical  
25 saturated thickness is not included as a line

1 saturated thickness of that area might -- may or  
2 may not be.

3 Q. Okay. So you didn't go back and look at  
4 individual well locations and try and determine  
5 whether there were clay layers at those  
6 individual well locations and whether or not  
7 that would impact these -- these overall  
8 numbers?

9 A. No, practical saturated thickness is not listed  
10 here. Again, it's represented in the model  
11 based on, you know, how clay at a certain  
12 interval might be; again, it's a three-layer  
13 model. So to the extent that it affects water  
14 level changes, it's represented, but as an  
15 actual, if we were to go out and, let's say,  
16 pick a spot within the model and say, what is  
17 the practical saturated thickness at this  
18 specific location or go out and say, for this  
19 geographic area for an index cell, what's the  
20 practical saturated thickness, we did not run  
21 that exercise.

22 Q. Okay. So if we were to -- and just for clarity  
23 purpose, table 2-9, that is -- that's for the  
24 whole basin, is that right, table 2-9?

25 A. That is for the basin storage area and central

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1 well field storage area --  
 2 Q. Okay.  
 3 **A. -- both geographic locations.**  
 4 Q. If we go to figure 10 now, that's -- it should  
 5 look like this.  
 6 **A. Okay.**  
 7 Q. With respect to figure 10, what we see here now  
 8 in figure 10 is individual index cells, ASR  
 9 index cells; is that right?  
 10 **A. Yeah, in figure 10, just so we're clear, make**  
 11 **sure we're on the same page, average aquifer**  
 12 **conditions by index cell at the end of simulated**  
 13 **drought stress period eight. So this is the**  
 14 **model predicted saturated thickness relative to**  
 15 **the statistics approach that we just talked**  
 16 **about earlier for each index cell.**  
 17 Q. And so on this particular figure, not only is it  
 18 showing us a percentage of the remaining -- of  
 19 the average saturated thickness, which is shown  
 20 in blue, but it's also showing us the average  
 21 remaining saturated aquifer thickness in feet.  
 22 Is that a true statement?  
 23 **A. That would be accurate.**  
 24 Q. So in other words, for index well 1, what this  
 25 is showing me is that for that index cell, after

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1 the modeling occurs, there's 163 feet of average  
 2 remaining saturated aquifer thickness; is that  
 3 true?  
 4 **A. In that cell, yeah. I believe our approach was**  
 5 **to use as a single well may not represent the**  
 6 **entirety of an index cell. We wanted to kind of**  
 7 **average things out, if you will, represent that**  
 8 **entire square, we felt like that was more**  
 9 **representative than a spot, I believe that was**  
 10 **our approach. So we would say in IW1, there**  
 11 **would be roughly 163 foot of saturated thickness**  
 12 **approximately at the end of stress period eight,**  
 13 **and that means that it is roughly 83 percent**  
 14 **full relative to predevelopment.**  
 15 Q. And so -- and I won't do this for time sake, but  
 16 if we were to walk through each of these index  
 17 cells, the black number would show the average  
 18 remaining saturated aquifer thickness in feet,  
 19 and the blue number would show that average  
 20 aquifer condition as a percentage; is that -- is  
 21 that true?  
 22 **A. Yes.**  
 23 Q. Now, with respect to figure 10, did this figure  
 24 take into account the practical saturated  
 25 thickness of these different cells?

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1 **A. No. With the caveats we talked about earlier,**  
 2 **the model itself contains different hydraulic**  
 3 **conductivity values based on what we think the**  
 4 **lithology is. Outside of that, you don't have a**  
 5 **practical saturated thickness number listed**  
 6 **here.**  
 7 Q. With respect to each of these index cells, did  
 8 you personally evaluate any individual well  
 9 locations and what some of those saturated  
 10 thickness and practical saturated thickness  
 11 would look like?  
 12 **A. I don't -- I don't believe I did that exercise.**  
 13 **One could do that exercise, I don't believe I**  
 14 **did it as part of the report here.**  
 15 Q. There's dedicated monitoring wells in each of  
 16 the index cells. Is that a true statement?  
 17 **A. Yes.**  
 18 Q. Did you analyze the well log data for each of  
 19 those monitoring wells personally?  
 20 **A. I don't recall. I mean, I've certainly worked**  
 21 **with them or seen them over a period of time**  
 22 **working with both ASR Phase I and Phase II. I**  
 23 **don't know that I specifically reviewed the**  
 24 **intervals here. Again, I believe the numbers**  
 25 **that are being represented are averages from the**

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1 **model output, and I'm not -- I'm trying to**  
 2 **think, I think the index well sites were**  
 3 **represented as bedrock data within the USGS**  
 4 **report. I don't recall off the top of my head,**  
 5 **but that is -- that is how those numbers came**  
 6 **about.**  
 7 Q. Do you know if anyone with Burns & Mac or with  
 8 the City, whether or not they analyzed these  
 9 individual index cell monitoring wells and the  
 10 practical saturated thickness for those wells or  
 11 any specific wells?  
 12 **A. Not off the top of my head, I don't recall**  
 13 **anyone who specifically did that exercise.**  
 14 Q. Okay. As you're sitting here today, do you have  
 15 any reason why nobody would have done that?  
 16 **A. So the spirit of this was to make sure we**  
 17 **conveyed the information a couple different**  
 18 **ways. We tried to illustrate not only**  
 19 **elevations, so if an individual user -- knowing**  
 20 **that this was very likely to go to a hearing**  
 21 **process, we wanted to be very open and clear in**  
 22 **what we think it meant in terms of water level**  
 23 **elevation in terms of the predicted answer and**  
 24 **then also the proposed level.**  
 25 **If an individual user had a concern about**

1 the practical saturated thickness at a given  
2 location, then certainly the hearing process  
3 kind of presented that opportunity for us to go  
4 cell by cell or well by well over thousands and  
5 thousands of well logs to try and figure out  
6 a -- an accurate representation of practical  
7 saturated thickness. I didn't see necessarily  
8 the value in that. I mean, one could do that in  
9 theory but probably not a whole lot of value  
10 relative to this. With enough information, I  
11 think someone is informed.  
12 Q. But you would agree with me that what's shown in  
13 figure 10, those are modeled results; is that  
14 right?  
15 **A. That would be accurate, I believe, yes.**  
16 Q. And no -- and neither you nor anyone that you're  
17 aware of, at least as a part of your team,  
18 compared these modeled results to the actual  
19 well log data. Is that a true statement?  
20 **A. I don't -- I don't recall doing that personally,**  
21 **and I don't recall a colleague or the City**  
22 **during the work-up process specifically in my**  
23 **memory, no.**  
24 Q. But would you agree with me that if one were to  
25 compare the modeled results with the actual well

1 that I have 100 feet of aquifer underneath me,  
2 but a lot of that's clay, certainly there's the  
3 opportunity for that in review.  
4 **So that's why we didn't feel like it would**  
5 **be, number one, accurate to have to perhaps say,**  
6 **at a four-mile-square level, say what practical**  
7 **saturated thickness was or wasn't. But**  
8 **number two, we were just trying to convey here**  
9 **is the general statistics for someone to take on**  
10 **and digest by themselves.**  
11 Q. Okay. So that -- so in your view, part of the  
12 reason why we're having this hearing is if  
13 somebody has a concern about the practical  
14 saturated thickness in a given area that this  
15 can be testified to and addressed in this  
16 hearing; is that true?  
17 **A. Sure, I -- I would think that would be the**  
18 **purpose of a hearing is to be heard, yes.**  
19 Q. Okay. Now, if we were to move to table 2-11,  
20 and I'm not going to beat a dead horse here,  
21 but, again, with respect to table 2-11, with my  
22 same line of questions, nobody took into account  
23 individual wells or the practical saturated  
24 thickness in table 2-11 either; is that correct?  
25 **A. That's correct.**

1 data and well log data that that would actually  
2 be a comparison that could be made to help  
3 ensure that there was accuracy in these modeled  
4 results?  
5 **A. Well, the modeled results are accurate in terms**  
6 **of what they predict in terms of water level**  
7 **change, so the ending elevation of the model in**  
8 **stress period eight is represented by, and**  
9 **relative to your question practical saturated**  
10 **thickness, the clays that we think that are in**  
11 **the actual aquifer, we're trying to simulate**  
12 **that by lowering the hydraulic conductivity.**  
13 **USGS used well logs for that effort to find**  
14 **areas where clays did or didn't exist.**  
15 **Relative to the exercise of trying to**  
16 **generate a percentage number by index cell for**  
17 **the practical saturated thickness, again, you**  
18 **could probably do that or take a shot at it.**  
19 **The purpose of making sure we had multiple**  
20 **figures and tables was to make sure that we had**  
21 **enough information that not only the regulatory**  
22 **agencies, but the hearing process could**  
23 **understand what that level was. And so if**  
24 **someone did have a concern about practical**  
25 **saturated thickness, say, well, it may be great**

1 Q. And, again, this is just modeled results in  
2 table 2-11, correct?  
3 **A. That's correct.**  
4 Q. Clear back in December, you testified that in  
5 the event the water table was dropped, let's  
6 say, for example, 23 feet, for example, the  
7 water level was dropped 23 feet, and you have --  
8 23 feet is one of your contingencies, in the  
9 event the water level was dropped by 23 feet, I  
10 think you testified the City could then drill a  
11 domestic well lower. Is that -- was that part  
12 of your testimony from back in December?  
13 **A. Sure. I mean, I think the spirit of that**  
14 **discussion and the context of that discussion**  
15 **was we have predicted elevations that we think,**  
16 **here's actually where we're going to end up; and**  
17 **if someone identified a problem, we have the**  
18 **capacity to, at least based on the results of**  
19 **the model, it looks like we have available**  
20 **saturated thickness, an additional aquifer to**  
21 **lower a domestic well, if they had an issue, or**  
22 **whatever well, if they had an issue, based on**  
23 **the model, so I believe that was the context of**  
24 **my testimony.**  
25 Q. And I think you indicated that within a matter,

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1 and I can pull up your testimony, but I think  
 2 you indicated if there was, for example, a  
 3 domestic well that was impaired by the water  
 4 level dropping that within a matter of days a  
 5 well driller could come out, they could drill a  
 6 new well and help to address that issue. Does  
 7 that sound like your previous testimony?  
 8 **A. Yeah, I think that's reasonable.**  
 9 Q. Do you know that if -- whether or not if a well  
 10 driller were to come out and let's say in the  
 11 hypothetical of the need to lower a domestic  
 12 well by 23 feet, do you know if the water  
 13 quality is generally the same when one drills  
 14 23 feet lower versus the original level?  
 15 **A. Water quality could change. I don't know**  
 16 **whether it would or wouldn't. I don't have any**  
 17 **idea. I do know that in the instance that there**  
 18 **was a significant water quality change, I don't**  
 19 **want to speak for the City, but hypothetically**  
 20 **if that were to be negatively impacted, I'm sure**  
 21 **the City would also pursue a remedy for that**  
 22 **water quality issue.**  
 23 Q. Do you have any idea what that remedy would be?  
 24 **A. There are a number of home treatment systems.**  
 25 **The common contaminants, at least in this area**

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1 and at least most alluvial environments, would  
 2 be iron, would be manganese, things of that  
 3 nature, natural dissolved constituents. There  
 4 are a number of treatment systems that are  
 5 readily available at the home level for that, so  
 6 I don't see that being -- being an issue.  
 7 Q. Have you specifically studied each index cell to  
 8 determine if drilling new wells would be a  
 9 viable approach?  
 10 **A. So much as -- if the determination is that we**  
 11 **have an adequate amount of saturated thickness,**  
 12 **we have an adequate amount of saturated**  
 13 **thickness, let's say, left at the end of the**  
 14 **predicted results, that would be as close as I**  
 15 **could come to saying it looks like there's**  
 16 **plenty of water and feet available in terms of**  
 17 **production.**  
 18 And even for a domestic well, even under a  
 19 situation where you had a low practical  
 20 saturated thickness, if we're talking about a  
 21 yield even for stock watering, or whatever the  
 22 case may be, to get on the order of maybe 30  
 23 gallons a minute, you can do that in lower yield  
 24 environments with much more screen interval.  
 25 You can get it in -- in sands that are a little

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1 **bit tighter, things of that nature. So in my**  
 2 **estimate, I do think that you can generally**  
 3 **lower a well, if it was impacted, in a majority**  
 4 **of the instances here, and you have a lot of**  
 5 **saturated thickness to do that and a lot of feet**  
 6 **to do that.**  
 7 Q. As it relates to the practical saturated  
 8 thickness, are you -- do you know if simply  
 9 lowering, let's say, the domestic wells in each  
 10 index cell, do you know for certain if that's a  
 11 viable approach?  
 12 **A. Nothing is absolute in geology. We can get some**  
 13 **generalizations. Can I guarantee personally**  
 14 **right now blindly going out, without drilling a**  
 15 **hole in the ground, that you will be guaranteed**  
 16 **to get water? No, I can't guarantee that it**  
 17 **won't be 100 percent filled with concrete, it's**  
 18 **underground, you never know. But there is a**  
 19 **high likelihood based on what we do know from**  
 20 **surrounding well logs. That's basically what we**  
 21 **do as geologists is we interpret based on**  
 22 **existing data what do we think the aquifer**  
 23 **underground picture looks like, and with that**  
 24 **aquifer underground picture, which we have with**  
 25 **the model and the bedrock elevations that have**

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1 **been produced in accordance with that and that**  
 2 **were developed by USGS, we think we have the**  
 3 **relevant saturated thicknesses and feet of**  
 4 **thickness left in terms of saturation that are**  
 5 **represented within the model results. So that's**  
 6 **the best I can do without actually going out**  
 7 **there and putting a hole in the ground.**  
 8 Q. To arrive at your conclusions, did you contact  
 9 any well drillers to help formulate the basis  
 10 for your opinion?  
 11 **A. In terms of geolocation and probability of**  
 12 **finding a producing well or turnaround, or**  
 13 **what's the question?**  
 14 Q. As far as your testimony with respect to  
 15 drilling new wells and how long that process  
 16 would take and the feasibility of doing that?  
 17 **A. That's just, that's based on my experience**  
 18 **drilling probably 30 or 40 monitoring wells at**  
 19 **this point, based on my experience of drilling**  
 20 **domestic wells and sampling domestic wells.**  
 21 **We've done large capacity wells in that time or**  
 22 **less, 30-inch bore holes or bigger. So to**  
 23 **conclude that basically we're looking at**  
 24 **anywhere from one to three days, especially if**  
 25 **someone is in dire need, to get a well turned**

1 around and knowing that well drillers do like  
2 overtime and getting paid, especially during  
3 high demand periods to run more than one crew,  
4 that's been my experience. So I would say one  
5 to three days of a domestic turnaround would  
6 still be okay.

7 Q. Earlier, back in December, I asked you if your  
8 expert testimony, of course -- well, of course,  
9 your expert testimony is limited to what's in  
10 your expert report, and I asked you if that  
11 summarized the full extent of your opinions, and  
12 I believe you said, your answer was yes back in  
13 December. Would you agree with me that your  
14 expert report doesn't indicate or analyze the  
15 impact of the City's proposal on water quality,  
16 would you agree with that?

17 A. I did not specifically look at the water quality  
18 impacts, and I don't think that's specifically  
19 included. I could generally speak to net  
20 effects of pumping, things of that nature, I'm  
21 an experienced hydrogeologist in this  
22 environment. Did I do any specific analysis for  
23 this report? No.

24 Q. With respect to whether or not the City's  
25 proposal is in the public interest, you didn't

1 specifically address the terminology public  
2 interest in your expert report. Is that a true  
3 statement?

4 A. I don't recall specifically saying specific --  
5 or public interest. If it is not in my expert  
6 report, then I obviously didn't -- didn't say it  
7 so ...

8 Q. With respect to safe yield, what is safe yield?

9 A. Different organizations have different policies  
10 that say what safe yield is. Safe yield can  
11 mean a different definition depending on where  
12 you go within the United States. Safe yield is  
13 sometimes a management policy that is a race to  
14 the bottom in terms of water level changes. So  
15 a safe yield may be we have a policy that says  
16 we are going to deplete groundwater at this  
17 rate.

18 Safe yield in other portions of the United  
19 States, in this case, for example, GMD2, means  
20 we are going to try to manage, at least through  
21 policy and rule and regulation, try to manage  
22 the aquifer in a sustainable manner where we  
23 allocate resources and new water regs based on a  
24 concept of a particular spacing interval or  
25 density of allowed pumping, based on what we

1 know about the hydrologic inputs of the aquifer  
2 system.

3 I believe GMD2 in this area manages safe  
4 yield at roughly 6 inches on average, roughly,  
5 of recharge per year, and I believe the way the  
6 agricultural regulation reads is you total up  
7 all of the water rights in a two-mile circle and  
8 look at the recharge rate of that two-mile  
9 circle, so two miles of square area multiplied  
10 by 6 inches of recharge, relative to the number  
11 of permits that have already been issued within  
12 that two-mile circle. That's the concept, at  
13 least, as GMD2 has it together as safe yield.

14 Again, there are other definitions that  
15 depending on where you go look in the country.  
16 In my experience, safe yield can mean different  
17 things to different people.

18 Q. Okay. Do you believe that the concept of safe  
19 yield, from your knowledge and understanding of  
20 water rights, do you believe that the concept of  
21 safe yield should apply to the City's proposal?

22 A. Well, the concept of safe yield here is a bit  
23 tricky because we have a complicated issue that  
24 involves bringing new water essentially to the  
25 table. So we have an aquifer storage and

1 recovery project. So that is bringing water  
2 from a transient resource, from a resource that  
3 would otherwise bypass the aquifer and head  
4 downstream to Oklahoma.

5 We take that transient resource and we're  
6 able to put it into the aquifer through physical  
7 injection, and that is kind of the general  
8 characterization of why it traditionally, I  
9 don't believe it's managed by safe yield because  
10 it is effectively bringing new water to the  
11 table, putting it in storage for a later use  
12 and, therefore, is not subject to safe yield  
13 because that water was sourced from the river.  
14 That is the concept of why it wouldn't be  
15 applicatory to safe yield.

16 Q. So with respect to the City's proposal, you, you  
17 specifically and nobody in your team analyzed  
18 how safe yield would be impacted with respect to  
19 the City's proposal?

20 A. No, other than we have water level changes and  
21 that's -- that relative impact to sustainability  
22 or safe yield.

23 MR. STUCKY: I don't think I have  
24 further questions.

25 PRESIDING OFFICER: Ms. Wendling.

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1 You want the microphone down there?  
2

3 **CROSS-EXAMINATION**  
4 **BY MS. WENDLING:**

5 Q. So on -- in the proposal, table 2-4, we talked  
6 about the PDSI values. I believe that you  
7 talked about using the --  
8 (Reporter requests clarification.)  
9 **BY MS. WENDLING:**

10 Q. Okay. Table 2-4, the PDSI data, I believe you  
11 said you used PDSI data to find surrogate  
12 drought years, I'm probably saying it not as  
13 accurately as you; is that correct?

14 **A. Yeah, so we're -- based on Mr. Winchester's**  
15 **work, Mr. Winchester researched the available**  
16 **record on the Palmer Drought Severity Index and**  
17 **also looked at the recurrence interval of**  
18 **drought based on PDSI in correlation to**  
19 **streamflows.**

20 And for our role, once we had the demands  
21 from the City and what they wanted to  
22 essentially simulate as 1 percent drought, they  
23 said, hey, Burns & Mac, we think based on John  
24 Winchester's work and based on our own internal  
25 policy decisions, here's what we think we want

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1 to simulate. We want to simulate a 1 percent  
2 drought, can you guys do that for us? And I  
3 said, yeah, let's -- let's take a look at that,  
4 that's our role, is let's run the Equus Beds  
5 groundwater model at the 1 percent drought  
6 level. And as I testified earlier, the USGS  
7 model kind of has a prescribed way to apply  
8 hydrologic variables. So things like  
9 precipitation that ends up as recharge, things  
10 like river flows, those are represented in the  
11 model, those are hydrologic variables that we  
12 want to represent.

13 And our first go at it was, okay, can we  
14 simply just use the values from the 1930s, that  
15 would be ideal. Then we kind of have direct  
16 apples-to-apples comparison with what was done  
17 with Mr. Winchester's work and our work. So  
18 we -- we first tried to do that, and our  
19 approach found pretty quickly that, as you'd  
20 anticipate, people back in the 1930s had much  
21 other things to worry about other than measuring  
22 rain and going out and checking staff gages and  
23 correlating all that data; especially we may  
24 have one or two points, not the entire basin.  
25 So our next step was, and it's common

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1 practice in the modeling industry to say, okay,  
2 well, while we may not have this data, we have  
3 newer data that we can probably use as a  
4 surrogate year, so two years that matched the  
5 best that we can or in this case a series of  
6 years that match the stresses that we want to  
7 apply. So in this instance, we couldn't use the  
8 old data, so we said what new years do we have  
9 with relatively good data on pumping and river  
10 flows and precipitation, all that good data, how  
11 do we match that to the past event we want to  
12 simulate, which was the 1930s drought.

13 And PDSI, if you remember John Winchester's  
14 testimony, is one of those measures that NOAA  
15 uses, and a couple of other agencies use, to say  
16 how dry was it effectively, and then what is the  
17 duration of a drought. We can compare those  
18 PDSI values, not just for an individual year but  
19 in sum to kind of say what was the depth -- or  
20 what was the total duration of a drought,  
21 because a drought for one year is obviously a  
22 different thing than a drought for ten years.

23 So that's how we came up with the 2011 and  
24 2012 values is we said, look, if we repeat 2011  
25 and 2012, those values pretty well match the net

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1 PDSI or the total PDSI values that were put  
2 together by Mr. Winchester and the City. So we  
3 think we're in the wheelhouse there.

4 And that's really the best we could do with  
5 the available record when we looked at what we  
6 think how pumping will actually occur, the river  
7 flows, the responses, all those things we felt  
8 like 2011 and 2012 was about the best match that  
9 we could do. So that's how we came up with it.

10 Q. Have you needed to do that type of drought  
11 reconstruction in other projects that you've  
12 worked on?

13 **A. Sure, and I think it's, again, it's fairly**  
14 **common if you have a known set of variables and**  
15 **then, let's say, how ag responded to that**  
16 **response, how the rivers responded to that**  
17 **stress, all those ingredients, then we can use**  
18 **that year as a surrogate rather than saying,**  
19 **well, what might have happened, let's try and**  
20 **recreate things based on that we think we might**  
21 **know versus, hey, this actually happened. This**  
22 **was an actual observed response of the aquifer**  
23 **system, of the river system, of precipitation,**  
24 **of recharge, and that sort of situation.**  
25 And all modeling that goes future is, of

1 course, prospective. So we're saying we know  
2 what happened in the past, that one's easy, we  
3 can measure most of it, but what can we look at  
4 in the future, what do we think is actually  
5 going to happen? And to simulate a 1 percent  
6 drought, that's -- we had to come up with dry  
7 years from somewhere, and 2011 and 2012 really  
8 just matched up pretty well.

9 Q. What was your analytical process to determine  
10 that 2011 and 2012 were the closest to the 1930s  
11 PDSI?

12 A. Sure, so we looked at the NOAA values for PDSI  
13 for a number of other years, and knowing that we  
14 had -- impacts to streamflow was another one  
15 that we looked at. Taking any one specific  
16 recurrence year, we took years that were dry;  
17 there's obviously other dry years in 100 years  
18 of record, but 2011 and 2012 also had a pretty  
19 healthy impact on streamflow, and that was  
20 another target for us is we wanted to simulate  
21 water in the streams as low, because we think  
22 that will be the case. So that's another reason  
23 that, again, 2011 and 2012 came out to just be  
24 the solution we felt like that worked best with  
25 the available data.

1 Q. Is the impact to streamflows reflected in the  
2 PDSI numbers, or is that a different source of  
3 data?

4 A. Well, PDSI is -- and maybe John -- it's a  
5 reflection -- it's not a measurement of  
6 streamflow, but it does correlate to streamflow,  
7 simply because it's just a magnitude number on  
8 the severity of drought. So, you know, the more  
9 negative the number, the -- if you were to, you  
10 know, hypothesize, you know, is negative 4, do  
11 we anticipate a bunch of streamflow in the  
12 river? Probably not. So that's about the best  
13 correlation that I can give you between those  
14 two.

15 Q. So in addition to using the PDSI data, did you  
16 use any additional data on streamflow in making  
17 the decision to use 2011 and 2012?

18 A. Yeah, and I think that's in the report, we have  
19 some streamflows that are in there that we  
20 looked at. Again, if you look at the exceedance  
21 probability of the streams for the particular  
22 years of 2011 and 2012, exceedance probabilities  
23 is if we went out there today and said, what do  
24 we think the river flow is going to be on a  
25 particular day? And you get a probability of,

1 you know, is it going to be 100 CFS, what's the  
2 likelihood of that relevant CFS number?

3 And we looked at CFS flows for 2011 and  
4 2012, and each of those years was, again, very  
5 low relative to the other years that we could  
6 have maybe possibly used to get our net total,  
7 which is what we wanted to be. We wanted to be  
8 relatively conservative in our projections,  
9 assuming that what we saw during 2011 and 2012,  
10 and I think maybe as others have elucidated to,  
11 is that we saw very, very low streamflows. We  
12 still anticipate some streamflow according to  
13 the model, but we would anticipate it to, again,  
14 be very low.

15 Q. Okay. Did you, in doing your modeling, did you  
16 model any alternative years other than '11 and  
17 '12?

18 A. No, not -- not with the proposal, no, we did  
19 not.

20 Q. So in table 2-4 again, showing the annual and  
21 seasonal differences, can you describe what is  
22 the difference between the 12-month annual PDSI  
23 and the 6-month seasonal PDSI?

24 A. Sure. I believe NOAA just calculated --  
25 calculates it two different ways. So the

1 12-month annual PDSI is how dry was the year.  
2 Over the entire period, what was that value when  
3 they calculate PDSI; it's relative to the whole  
4 year, the 12 months. The 6 month, I believe, is  
5 based on a growing season, so we kind of want to  
6 know what's the impact to crops and trees and  
7 all the things that really depend on water,  
8 outside of just us, and that's oftentimes used  
9 as, okay, well, what happens when we really need  
10 it? That number is more of a measure of the  
11 severity of impact on things like streamflow.  
12 You can have cumulative annual values and  
13 cumulative seasonal values, they mean different  
14 things to different people and different  
15 resources.

16 Q. So when you were trying to match the figures  
17 from the '30s drought, were you more focused on  
18 the annual or the seasonal, or did you look at  
19 both of them equally?

20 A. Right now, it is just basically the seasonal.  
21 Again, I think the -- the relative impact was  
22 based on seasonal. If you look at the  
23 comparison that's in the gray bars at the bottom  
24 of that table, I think we were at a cumulative  
25 for a 12 month of 21.09 negative, for the 12

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1 month. We're actually slightly lower than that,  
 2 so we were -- we were less intense from an  
 3 annual perspective.  
 4 Again, I think there's a lot of demand on  
 5 the river system and the hydrologic system  
 6 during a specific period, so perhaps a better  
 7 match might be the 6-month seasonal. But we're  
 8 at 21.58, and we're just slightly above on the  
 9 percent negative in terms of our match at  
 10 negative 23.45. So we are slightly below or  
 11 slightly better from a drought perspective,  
 12 we're in slightly better conditions at an annual  
 13 level but slightly more severe during those high  
 14 intense periods.  
 15 Q. So are there any considerations that should be  
 16 taken based on -- in looking at the annual, the  
 17 difference between 21 and 15, that being a  
 18 larger difference, is there anything that needs  
 19 to be considered specifically due to that?  
 20 A. Not that I know of, I just think you could have  
 21 some periodic rain or another event that would  
 22 drive that number down. Or perhaps going into  
 23 the intensity, so let's say at the start of  
 24 2011, we don't know if we're in a drought,  
 25 things are actually not too bad. It's not until

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1 the sun turns on us at 110 degrees for 90 days  
 2 straight that we know that, hey, something  
 3 serious is going on. So that can tend to skew  
 4 the value of using that annual amount versus the  
 5 6-month amount, if that makes sense.  
 6 Q. If we go to, I think it's attachment F to the  
 7 proposal which is the actual PDSI figures.  
 8 A. Okay.  
 9 Q. When you go to the figures for 1933 through  
 10 1940, will you read us the seasonal PDSI number?  
 11 A. Okay. I'm on the page that's south central  
 12 Kansas PDSI, 2376, 2865 negative, negative 8.85,  
 13 negative 23.9, negative 17.38, a positive 4.15,  
 14 negative 15.27, and negative 15.8 for the year  
 15 1940.  
 16 Q. Thank you. So in 1938 is the year that we had  
 17 the positive 4.15, correct?  
 18 A. Yes, there's a positive 4.15 in the seasonal  
 19 value, yes.  
 20 Q. So how do you describe a positive value --  
 21 positive PDSI during a severe drought?  
 22 A. It's possible that there were just some timely  
 23 rains during that time to adjust the net  
 24 deficit. I think Mr. Winchester's testimony  
 25 basically provided -- it's kind of like a water

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1 bucket model essentially that says is vegetation  
 2 going to be satisfied, is there enough soil  
 3 water balance to go around, it's kind of how  
 4 PDSI works. So in this case, there would be a  
 5 slightly positive value.  
 6 Do note that you have to divide that value  
 7 by the 6 -- 6 to get the actual PDSI value, so  
 8 you would have to divide the 4 point, whatever  
 9 it was, 15 there by 6. So it was slightly  
 10 positive. We were still within basically a  
 11 normal range for that year. It wasn't  
 12 particularly wet according to the value, but it  
 13 would have been a wetter year or perhaps a  
 14 timely set of rainfall for that particular year.  
 15 Q. Have you considered how your simulated drought  
 16 using 2011 and 2012 would be impacted if you  
 17 were to interject one wet season into that  
 18 eight-year period?  
 19 A. Theoretically, it would make river flows better,  
 20 it would drive all demands down, probably  
 21 including the City's to some extent. It would  
 22 provide for additional recharge to the Equus  
 23 Beds, ultimately essentially would end up in  
 24 slightly higher water levels would be my  
 25 estimation of the impact of that.

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1 Q. That wasn't incorporated into any of the  
 2 analysis -- a wet year was not incorporated into  
 3 any of the proposed minimum index levels?  
 4 A. No, no, we repeated 2011 and 2012 hydrologic  
 5 variables within the model. We did not have a  
 6 particular wet year that we simulated. The max  
 7 was based on the two PDSI values that we just  
 8 discussed.  
 9 Q. Who ultimately decided that 2011 and 2012 were  
 10 the best years to use?  
 11 A. That was done in combination with review with  
 12 the City. I looked at the norm values, and we  
 13 just discussed Mr. Winchester's values that we  
 14 just discussed, we looked at streamflows that we  
 15 just discussed, and basically landed on the  
 16 drought of 2011 and 2012 was both, I think,  
 17 representative of both intensity and potential  
 18 duration. So we captured the things that we  
 19 wanted to capture in drought to make that stress  
 20 the best we think is possible for a projected  
 21 drought into the future. So it was a  
 22 coordination effort between Burns & McDonnell,  
 23 myself, and the City to say, here, we think this  
 24 is about the best match to your 1 percent  
 25 scenario.



1 Q. Okay. Going back to table 2-5 in the proposal  
2 where we talked about the inputs, the fifth row  
3 down, irrigation, industrial, and other well  
4 pumping.

5 **A. Okay.**

6 Q. Can you describe what other well pumping  
7 includes?

8 **A. Any other -- trying to think what else might be  
9 captured. We've got irrigation in the model,  
10 we've got industrial demands in the model, and  
11 then we would have other municipalities that  
12 would be in the model, so Halstead, Newton.  
13 Anybody else who's on municipal water right  
14 would have been represented within the model.**

15 Q. So other well pumping would be those other  
16 municipalities?

17 **A. Yeah, yeah, sure.**

18 Q. And this is based off of the actual data  
19 reported to DWR?

20 **A. Right, with the exception we discussed earlier,  
21 the net irrigation value. We apply that based  
22 on the type of system that's recorded with the  
23 water use reports and adjust accordingly.**

24 Q. Is there any water use that's not reported to  
25 DWR?

1 table?

2 **A. Well, from the standpoint that the existing  
3 industrial user had used water in 2011 and 2012,  
4 if they were anticipated to grow, or something  
5 like that, an increase in their water use  
6 wouldn't necessarily be addressed here. The  
7 majority of the water use comes from, again, the  
8 City and ag users, so we felt like those were  
9 the -- probably the best focus to come up with  
10 accurate results.**

11 **I couldn't tell you the quantity of  
12 industrial users or the quantity of the other  
13 municipalities, just that their pumping was  
14 represented, and if they pumped something in  
15 2011 or if they pumped something in 2012, those  
16 are within the model.**

17 Q. Okay. And we talked at length earlier so I just  
18 want to try and understand that the City in  
19 using MODSIM-DSS was using the historical data  
20 from 1933 through 1940 in doing -- in their  
21 analysis?

22 **A. I believe that's correct. The best person to  
23 answer that is probably Mr. Winchester. Again,  
24 I didn't generate that work, but I believe he  
25 looked at streamflows and in general how Cheney**

1 **A. Probably domestic wells. I believe there's an  
2 exemption for stock watering at a certain value  
3 that doesn't require a water right. Anything  
4 that's in here that's not a water right is not  
5 going to be a reported pumping value, it's not  
6 going to be a represented well in the model.  
7 I'm trying to think if there's anything else. I  
8 don't know of any others offhand, but that would  
9 be the general characterization.**

10 Q. Is there any estimate of the value of  
11 non-reported pumping?

12 **A. I don't have any of those offhand. GMD or  
13 someone else may have taken a shot at that  
14 previously; I don't have those values off the  
15 top of my head.**

16 Q. And the pumping figures, as we talked about  
17 earlier, represent what was actually occurring  
18 without -- other than your irrigation adjustment  
19 in '11 and '12?

20 **A. That's correct.**

21 Q. Not forecasted for what would happen in 2060?

22 **A. Correct, for a municipality or an industry, we  
23 didn't do any additional projections for those.**

24 Q. So a new industry utilizing more water would  
25 not -- by 2060 would not be represented on this

1 **was the focus of that, how Cheney would respond  
2 during the 1930s drought to generate the inputs  
3 to Cheney, which is a big controller on how  
4 water is apportioned within the MODSIM model.**

5 Q. Mr. Stucky asked you about the Bentley well  
6 field and the E&S well field and that  
7 availability, and you mentioned that that  
8 flow -- or the availability of water is  
9 dependent on flow from the river and that during  
10 2011 and 2012 the flow was low; however, you  
11 indicated that there was still pumping at those  
12 sites, correct?

13 **A. Uh-huh, sure.**

14 Q. But you made a comment that during a severe  
15 drought, you would anticipate even lower flows  
16 in --

17 **A. Sure.**

18 Q. -- the river; is that correct?

19 **A. I think a general characterization of drought is  
20 we would anticipate as duration, continue to  
21 grow, and actually, again, I --**

22 **(Reporter requests clarification.)**

23 **A. The first time I saw the document, I did make a  
24 note that we saw more pumping in 2011 than we  
25 did in 2012 from those particular resources, and**

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1 I think that pattern would absolutely continue  
 2 to occur. So maybe we had the opportunity to  
 3 take in the first year a chunk of water when  
 4 water levels and -- or, excuse me, as I said,  
 5 river flows would be good, and as river flows  
 6 declined on the Ark River, they're both Ark  
 7 River resources, the yield of those wells and/or  
 8 the permit conditions that allow for actual  
 9 withdraw of water from those wells may not be  
 10 there.  
 11 So that was the, essentially the answer of  
 12 why those resources may not be firm sources of  
 13 supply or would, at least, be anticipated to  
 14 drop in yield precipitously, especially for the  
 15 E&S well field, which is in a shallower system,  
 16 during drought.  
 17 **BY MS. WENDLING:**  
 18 Q. So the City also has rights to withdraw water  
 19 from the Little Arkansas River for recharge or  
 20 sending that directly to Wichita for use; is  
 21 that correct?  
 22 **A. That's correct.**  
 23 Q. And that permit also has triggers based on  
 24 streamflow; is that correct?  
 25 **A. That's correct.**

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1 Q. How does the model account for that -- the  
 2 stream -- reduced streamflow and the ability to  
 3 meet the minimum desirable streamflow in order  
 4 to utilize that water, is that factored into the  
 5 model?  
 6 **A. It is so far in that we -- we assumed that**  
 7 **during the drought we would not be able to**  
 8 **capture recharge credits. With the Little Ark**  
 9 **River going to be anticipated to be very low**  
 10 **during the majority of the duration of the**  
 11 **eight-year drought, we did not anticipate taking**  
 12 **any water from, at least source water from ASR**  
 13 **Phase I or Phase II; in other words, we would**  
 14 **not be capturing water from the Little Arkansas**  
 15 **River, we wouldn't anticipate those permit**  
 16 **conditions to be -- allow that, facilitate that,**  
 17 **river elevations wouldn't be where they need to**  
 18 **be, flows wouldn't be where they need to be.**  
 19 **And then from a planning standpoint, we felt**  
 20 **like it was pretty prudent to assume that.**  
 21 Q. So as -- the Little Arkansas is not used as a  
 22 water resource during the eight-year drought  
 23 period?  
 24 **A. That's correct, yeah.**  
 25 Q. You mentioned that while you did not do the

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1 allocation of demands between Cheney and Equus  
 2 Beds, that was done by the City, you believe  
 3 that allocation to be reasonable. Did I hear  
 4 that correctly?  
 5 **A. I think so. My understanding of the model, and**  
 6 **I have viewed the code, while I didn't run the**  
 7 **specific set of model parameters and tweaks that**  
 8 **were in the report, I understand generally how**  
 9 **MODSIM works. The pipeline values and the**  
 10 **blending requirements and the other things that**  
 11 **are in the model, I think, are reasonable.**  
 12 Q. And you specifically looked at all of the inputs  
 13 to that model, or you just know based on how the  
 14 model functions?  
 15 **A. I know of the model's function and of its**  
 16 **relative simplicity. I mean, black box models**  
 17 **can be kind of a scary thing. Again, it's**  
 18 **basically a calculator on steroids or an Excel**  
 19 **spreadsheet on steroids, it just has some coding**  
 20 **that allows us to make those optimized resource**  
 21 **decisions. So from that standpoint, it's**  
 22 **relatively, I won't say bulletproof, it's**  
 23 **just -- it's not as complex as what it sounds.**  
 24 **So for that reason, I think it to be a fairly**  
 25 **robust and common method for resource management**

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1 **and -- and reasonable based on the allocations**  
 2 **of resources that are in there. Nothing red**  
 3 **flagged when the City gave me, Daniel, please**  
 4 **simulate this amount of demand from the Equus**  
 5 **Beds and the ASR well field, nothing hit me as a**  
 6 **red flag to say that's too much or too little in**  
 7 **other words.**  
 8 Q. But did you review the input to the MODSIM  
 9 model?  
 10 **A. No, no, I have not in detail, no.**  
 11 Q. And one simple typo or one positive when it  
 12 should have been a negative could dramatically  
 13 impact the results?  
 14 **A. If you wanted to think of it that way. If you**  
 15 **set a variable that was outside of the**  
 16 **conditions or something of that nature, sure.**  
 17 Q. So while the tool functions in a reasonable  
 18 manner, without really reviewing the input, how  
 19 can you know that the output is reasonable?  
 20 **A. For this specific instance of them running the**  
 21 **model, I just know that the relative**  
 22 **distribution to the Equus Beds, I think, is**  
 23 **reasonable relative to Cheney, knowing what I do**  
 24 **about the blending requirements and some of the**  
 25 **other things. Again, I didn't review the inputs**

1 in detail, but do I think the quantities are  
2 reasonable, are they, you know, an order of  
3 magnitude off, or something like that, that  
4 would be my take on it.

5 Q. Table 2-5, once again, has the two years of  
6 recovery model.

7 A. Okay.

8 Q. When you're doing drought reconstruction  
9 projects, do you typically model a recovery  
10 period?

11 A. It depends, it depends on the duration of that  
12 event. We may want to understand two things, we  
13 may want to understand how the aquifer depletes  
14 or as water levels drop, how that's occurring.  
15 The flip side of that is from a water resources  
16 management standpoint, if you're a municipality,  
17 you're also interested in how fast it recovers.  
18 From an ASR standpoint, from just a pure ability  
19 to pump it back out of the ground, we kind of  
20 wanted to know that. And so we ran those two  
21 additional recovery years, number one, to make  
22 sure that we didn't continue to see water levels  
23 decline, despite everything kind of coming back,  
24 the system coming back to life and going back to  
25 normal; and the other side of that is just

1 the flip side of this is when things go back to  
2 normal in a 1 percent drought, how do things  
3 come back?

4 Q. And what is normal?

5 A. It would be within the bands of that relative  
6 PDSI or even slightly wet. So 2010 was kind of  
7 a relatively normal year, I think it was  
8 slightly positive PDSI, so we wanted to simulate  
9 things kind of coming back from a hydrologic  
10 standpoint, river flows, additional recharge,  
11 get out of the dry spell of the drought, come  
12 back into, quote, normal period, and then just  
13 run that for two years was the decision to see  
14 how water levels changed and came back, if they  
15 did.

16 Q. Is there a normal water level for the aquifer  
17 itself?

18 A. Well, there's -- there's 100 percent full, which  
19 was predevelopment; that would be basically no  
20 pumping. So all of the rain that would fall  
21 within the basin would basically either run off  
22 or percolate downward if it wasn't absorbed by  
23 plants and that sort of thing. It would fill up  
24 the aquifer, and that -- that aquifer would be  
25 leaking essentially back to the rivers; that is

1 understanding how fast it would come back up.

2 Q. Now, in the proposal -- or one of the documents  
3 says that the recovery was modeled at the  
4 request of DWR and GMD2. Was it their decision  
5 to request the recovery, or was that a  
6 proactive --

7 A. I think it was a collaborative discussion to  
8 include it. Could have included it, could have  
9 not included it. In general, I don't think we  
10 saw any declines outside of stress period eight,  
11 and we wouldn't have anticipated any. Knowing  
12 that the magnitude and the change of the  
13 relative dryness compared to a normal wet, or  
14 even normal periods, we just would anticipate  
15 those normal periods providing enough  
16 contribution that in theory, stress period eight  
17 should have been the lowest recorded year.

18 So that was kind of our goal is come up  
19 with what's the bottom or what's the lowest  
20 recorded year. But we discussed, I think, with  
21 GMD2 and maybe some with DWR that there might be  
22 some value in looking at the recovery period  
23 just to, number one, ensure that we didn't  
24 continue to see drops; and then, number two,  
25 what does recovery look like. I think that's

1 essentially steady state or predevelopment. In  
2 other words, there is not a lot of pumping,  
3 things are as full as they're going to get.  
4 That would be the only thing I could say as  
5 normal. The rest of the time we're kind of in  
6 flux, we have wet years, dry years, we see  
7 different pumping patterns over those different  
8 years, and so everything is kind of always  
9 changing.

10 Q. So what signals to you the aquifer has recovered  
11 post drought?

12 A. Water level changes are probably the best  
13 indicator of what's going on in the unconfined  
14 system we have. That tells you a couple  
15 different things. It tells you where you're at  
16 from a storage perspective. It kind of gives  
17 you a meter on where you're at to -- to other  
18 relevant points in history. Water levels are  
19 just a pretty -- pretty genuine valuable tool  
20 for measuring that; that's the common practice  
21 to measure how much storage we have underground  
22 right know, that's pretty commonplace.

23 Q. Going to attachment I of the proposal, it's a  
24 map before of a hydrograph.

25 A. Simulated drought results recovery of ASR

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1 credits limited by minimum index level  
 2 elevations, that one?  
 3 Q. Yes.  
 4 A. Okay.  
 5 Q. What factors caused some of these boxes to be  
 6 shaded while others are not?  
 7 A. Well, couple different things. If I was just a  
 8 hydrogeologist, I'd never seen this before, I  
 9 would say, okay, where -- where would I  
 10 anticipate water levels to be the highest, both  
 11 during drought or normal conditions? Rivers  
 12 would be a good place to start where despite a  
 13 lot of pumping, let's say, from pre-1990  
 14 conditions. Here, I would anticipate along the  
 15 rivers to have relatively high water level  
 16 conditions as compared to other places. Rivers  
 17 provide a nice donation under dry conditions as  
 18 a donation back to the aquifer. So under those  
 19 conditions I would anticipate those areas to be  
 20 fuller relative to others.  
 21 If I was looking at this, again, blind and  
 22 saying, okay, where are the -- where are the  
 23 triangles on the map that say these are pumping  
 24 wells, I would anticipate the core water level  
 25 changes, if we're talking about these wells

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1 pumping a lot, to be kind of where they are  
 2 within the red outline of the USGS central well  
 3 field storage area.  
 4 So the reason some of these don't go below  
 5 the 1993 levels is probably just a function of  
 6 the 1993 levels being what they are. Some areas  
 7 we don't have the pumping density to drive it  
 8 there. 1993 levels may have been something as  
 9 simple as they just were still relatively full  
 10 conditions back then and relatively full  
 11 conditions in the starting conditions of 1998.  
 12 So that would be the reason why each one of  
 13 these is not necessarily filled out as a shaded  
 14 area that drops below the 1993 level.  
 15 Q. And what drives the decision on how much to pump  
 16 from the index cell?  
 17 A. We distributed pumping in the model based on how  
 18 the City actually pumps based on well capacity.  
 19 Some wells have better rights than others under  
 20 the City's base rights. Some wells are just, in  
 21 general, better pumpers than others.  
 22 So we distributed City pumping based on the  
 23 City's recommendation; they provided us with a  
 24 list of wells, and here's what we think we're  
 25 actually going to pump out of these specific

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1 wells. And, logically, recovery of ASR credits  
 2 would probably happen in that same pattern. You  
 3 would recover more ASR credits from stronger  
 4 pumping wells than you would from other wells  
 5 that were weaker pumpers, just to meet that net  
 6 demand total.  
 7 Q. So you said that stronger pumper versus weaker  
 8 pumper or better pumper, what do you mean by a  
 9 better pumper?  
 10 A. Sure. Some of the City's wells go as high as  
 11 maybe 1200 gallons per minute, as an example,  
 12 and good yield, higher pumping capacity, it's  
 13 just a better well. We've got more aquifer  
 14 saturated thickness, the sands that we  
 15 encountered when we drilled the well might have  
 16 been better sands, cleaner sands, they transmit  
 17 water better, which makes for a more higher  
 18 capacity well. Other areas, we're not that  
 19 lucky, we may have a well that's 600, 700  
 20 gallons per minute.  
 21 So we didn't want to assume that, well,  
 22 let's assume that we just pumped 1200 gallons  
 23 per minute, as an example, from every well and  
 24 we do it uniformly. In reality, we wanted to  
 25 have that -- that allocation of where we think

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1 we actually are going to take water. That's  
 2 going to feed things like how water levels  
 3 change through time, especially in a drought  
 4 response model. So we felt it better rather  
 5 than just uniform distribute pumping, let's say,  
 6 to all the City's well field evenly in that  
 7 example, let's -- let's actually take it how we  
 8 think we're going to take it for our best  
 9 knowledge based on our existing infrastructure.  
 10 Q. So a better pumping well has nothing to do with  
 11 a well's actual infrastructure; it's more about  
 12 the conditions below surface?  
 13 A. Yeah, you bet.  
 14 Q. And that's outside of the City's control?  
 15 A. For the most part. I mean, we -- we do our  
 16 diligent effort to find the best hole in the  
 17 ground we can but ...  
 18 Q. Okay. If the City chooses to redistribute  
 19 pumping, will that change the color shading,  
 20 then, on this?  
 21 A. Yeah, absolutely, and I believe I testified even  
 22 earlier that's one of the reasons for  
 23 contingency. In my experience, there hasn't  
 24 been a well field that I worked in that's  
 25 100 percent functional all the time. Wells, we

1 like to think of them as simple objects, they're  
2 a hole in the ground, but we have things like  
3 pumps and variable frequency drives and we have  
4 things like weather and lightning, we have  
5 pipelines, all those things are mechanical, so  
6 it's never 100 percent, and so you could have a  
7 redistribution based on that.

8 You could have a redistribution, frankly,  
9 based on we have higher water levels in an area,  
10 we want to pump that area more focused than an  
11 area with lower water levels. So we could  
12 actually redistribute to the benefit of water  
13 level changes, as an example, within the  
14 aquifer. But that's one of the reasons we added  
15 contingency is just for some of those unknowns  
16 that are just like that.

17 Q. You talked about -- we talked about possible  
18 infrastructure changes to wells, and you said a  
19 cost benefit analysis would not support those  
20 changes in your opinion; is that correct?

21 A. Yeah, basically, if we wanted to, let's say, go  
22 convert the smallest down tube on a well to an  
23 even smaller down tube, if we have a recharge  
24 event available, let's say, in Little Arkansas  
25 River, we've got water available, we got 15 MGD

1 of plant, the plant's pumping, we send that out  
2 to our well field, does it make sense from a  
3 investment standpoint, does it make sense from a  
4 viability standpoint to try and inject 50  
5 gallons per minute for, let's say, duration of  
6 an event, maybe two, three weeks, then have to  
7 redevelop that well for just simple  
8 infrastructure reasons? Typical ASR well  
9 operation, you inject and then just as a  
10 function of taking care of that well, you have  
11 to redevelop. The redevelopment time on that is  
12 at a high rate, often at times, I believe, some  
13 of the design rates are even at 1200 gallons per  
14 minute. It's just not feasible to achieve the  
15 City's goals.

16 And right now we already have a number of  
17 recharge wells that are effectively idle.  
18 Again, we don't have the recharge capacity even  
19 if we wanted to go make each well 25 gallons per  
20 minute, 10 gallons per minute. To achieve the  
21 City's goal of establishing roughly 50 to  
22 60,000 acre-feet of credits just wouldn't happen  
23 even if we wanted to go and reinvest and make  
24 the down tube smaller and try and make the  
25 infrastructure work, it just doesn't with the

1 water levels that we're at. I just don't think  
2 it would be feasible, economical. I mean, I  
3 could run the numbers at some period but just  
4 don't think it would be recommended.

5 Q. So when you planned for Phase II, were higher  
6 water levels not contemplated?

7 A. They were very much. The concept of ASR, as I  
8 recall, especially Phase II, was for - and there  
9 were additional phases contemplated beyond Phase  
10 II - was not just a singular or, as we're  
11 talking about it today, 1 percent drought event  
12 or -- it was very much drought oriented, but it  
13 was also contemplated as a daily source of  
14 supply. So not just from a year to, you know,  
15 ten years later event but almost as a daily  
16 source of supply to meet peak day demands; that  
17 was the concept.

18 And so that also piggybacks on top of the  
19 City using much more of their base water rights.  
20 So instead of using, as we've seen in history  
21 since 1993, roughly 20,000 acre-foot on average,  
22 the City pumping on the order of maybe 30 or  
23 35,000 acre-feet, so tipping the balance,  
24 keeping water levels low just to meet demands,  
25 based on the previous projections and at the

1 time that the project was contemplated, that's  
2 what we anticipated was something operating the  
3 project during lower conditions.  
4 Since then, we've seen from the City's  
5 resource management we are at a historic high.  
6 We can tell a story that a lot of places in  
7 Kansas can't. We're at near predevelopment  
8 conditions, 98, 97 percent full. Ballpark, USGS  
9 puts out a report generally either every year,  
10 every other year with pretty good grade score on  
11 where we're at.

12 Q. Is that even today, currently, we are at 97, 98  
13 percent?

14 A. I believe that's correct, yeah. I don't know  
15 the exact value off the top of my head, but  
16 we're -- we're pretty good condition, yes.

17 Q. And are you familiar with the decision by the  
18 City almost two years ago to pump as  
19 aggressively as they could from the Equus Beds  
20 in order to make room for recharge credits?

21 A. I don't know of the policy decision. Other  
22 minds will be able to speak to the internal  
23 policy decision, I'm not in charge of water  
24 resource optimization for the City. I know that  
25 they did make a management decision. From the

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1 **City's perspective, right now they have one way**  
 2 **to accumulate recharge credits and that's to**  
 3 **physically put it in the ground.**  
 4 Q. I'm aware of that, do you -- if the City, and  
 5 let's assume that you were aware of this  
 6 decision, has been pumping as aggressively as  
 7 they can from the Equus Beds for two years,  
 8 should they now be able to accumulate recharge  
 9 credits?  
 10 **A. It depends on what they've pumped in total.**  
 11 **Again, I think the concept that we talked**  
 12 **earlier was maintaining water levels much, much**  
 13 **further than where we're at now. I mean, the**  
 14 **report itself, we're talking about initial**  
 15 **condition of roughly 1998, starting condition,**  
 16 **so that's -- that's a little bit different than,**  
 17 **you know, let's say, a 5- or 10-foot water level**  
 18 **change within the well field.**  
 19 I think the decision to pump additional  
 20 water supply out of -- or pump base water rights  
 21 in excess of roughly more than 20,000 acre-feet,  
 22 which would result in depletions based on  
 23 average water use, it's going to take awhile to  
 24 get there. I don't recall what the last two  
 25 water use years totaled from the City. Anything

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1 in excess, based on my knowledge of the system,  
 2 I think the sustainable supply is roughly  
 3 30,000 acre-feet, something of that order, when  
 4 you combine municipal supply and ag supply.  
 5 And we can kind of see that in some of the  
 6 documents that are within the report. Water  
 7 levels go up, ballpark 30,000 acre-feet of net  
 8 between the City and other users; water levels  
 9 go down when we exceed that value, so it's  
 10 somewhere in there. So it would take -- I don't  
 11 recall again what the City used in the last two  
 12 years, so that would probably be why we're not  
 13 at, as an example, sustained 15 million gallons  
 14 a day or 30 million gallons a day, simply  
 15 because we haven't reached a level, we're not  
 16 there yet, that we can sustainably recharge that  
 17 number.  
 18 Q. Do you know how long it will take to get back  
 19 down to the 1998 level?  
 20 **A. I don't. I assume it would parallel, if you**  
 21 **looked at history, same -- similar number of**  
 22 **years. I don't have that off the top of my**  
 23 **head. It's something you could model**  
 24 **potentially, it's probably how I would approach**  
 25 **it, but I don't have that number as I sit here**

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1 today.  
 2 Q. Okay. Let's turn back to figure 14, the  
 3 operations report.  
 4 **A. Okay.**  
 5 Q. The data in -- it's page 3-12 of the proposal.  
 6 I understand the data in this table to be a  
 7 snapshot of time in 2016?  
 8 **A. Yeah, January of 2016 would be how this -- at**  
 9 **least the water levels that are in there, that's**  
 10 **what it's based off of, yes.**  
 11 Q. And is it the intention that the operations plan  
 12 will always be based off of a January water  
 13 level measurement?  
 14 **A. I think that was the concept in the draft**  
 15 **operations plan. I don't know that the City is**  
 16 **opposed to any other time of the year or**  
 17 **anything of that nature, but the current concept**  
 18 **is January just because that applies a nice,**  
 19 **uniform, kind of things are at static at that**  
 20 **point, the best you're going to get, kind of**  
 21 **gives you an -- the best eyeball of storage**  
 22 **capacity at any given time.**  
 23 Q. Okay. And the operations plan is how you  
 24 achieve the far right column, available physical  
 25 recharge capacity; is that correct?

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1 **A. That's correct, yes.**  
 2 Q. So the plan would be to calculate available  
 3 physical recharge capacity in January of each  
 4 year?  
 5 **A. Yeah, in this draft example, absolutely, yes.**  
 6 Q. And water levels are typically higher in January  
 7 than they are in, say, July; is that correct?  
 8 **A. In general, yes. Yeah.**  
 9 Q. So you are going to have more storage capacity  
 10 in July?  
 11 **A. I would say more temporary storage capacity.**  
 12 **And from an operational standpoint, we did think**  
 13 **about that, the role of January versus, let's**  
 14 **say, July. Each one of these wells is kind of**  
 15 **its own beast, and so from a conservative**  
 16 **planning standpoint, when you say the City has**  
 17 **to plan on what can we -- what can we physically**  
 18 **inject, I think the City said they are committed**  
 19 **to trying to physically inject anything they**  
 20 **can. But outside of their own pumping, some of**  
 21 **these wells are adjacent maybe potentially to**  
 22 **others. Certainly, ag demand during July I**  
 23 **would anticipate to increase which would cause**  
 24 **water levels to lower. But having a permit**  
 25 **condition tied to what another user may or may**

1 not do.  
2 Also when you think about the concept of  
3 the project, we take water from the Little  
4 Arkansas River when it's available, and that  
5 generally happens when, of course, it's raining  
6 and we have higher than normal river flows. And  
7 so that doesn't necessarily correlate with ag  
8 pumping. So that was another spirit or thought  
9 in why we picked January. It doesn't mean that  
10 it couldn't be another level, it's just one of  
11 the reasons that we picked January.  
12 Q. Have you prepared any other operations plan  
13 based on a date other than January 2016?  
14 A. Not in the proposal, no.  
15 Q. Have you ever done this outside of the proposal?  
16 A. Not that I know of other than the discussion we  
17 just had and we contemplated what other  
18 potential elevations might make sense, what  
19 other, you know, data could we base a decision  
20 off of, which ultimately led to the January  
21 number.  
22 Q. And how was 2016 selected?  
23 A. 2016 is just an example. So we would do this  
24 conceptually every year. So if we went out in  
25 January of this year and we measured water

1 levels, that would come up to a total number  
2 that we think we can physically inject based on  
3 what the water levels were for January of 2020.  
4 You could implement this potentially as a permit  
5 condition, to say here's what your potential  
6 AMCs are, or this is basically put your money  
7 where your mouth is in terms of you say you're  
8 going to physically inject it, how do we know  
9 you're going to do it, show us on paper, show us  
10 in a permit condition, this is that concept. It  
11 may not be perfect, but it's a really good  
12 start, we think.  
13 Q. And can you identify which columns on figure 14  
14 are impacted by the City's infrastructure?  
15 A. Sure, so the two -- no, the -- well, just count  
16 from the -- count from the right, the second  
17 from the right and the third from the right,  
18 labeled as maximum well infrastructure recharge  
19 rate and minimum well infrastructure recharge  
20 rate.  
21 Q. Which, then, ultimately impacts the final  
22 column, so the last three on the right? Is that  
23 correct?  
24 A. Well, so the physical recharge capacity relative  
25 to -- when I say infrastructure, I mean a pipe

1 or I mean something physical, a physical  
2 limitation, other than just the aquifer, an  
3 infrastructure limitation, something of the  
4 City's own cause here, of a engineering design,  
5 that would steer, it's at least two pieces of  
6 the answer to the final column, yes.  
7 Q. Okay. And so as I look at your operations plan  
8 for 2016, do I read this correctly to show that  
9 there would not be any physical recharge?  
10 A. Well, we could try and put 1.18 MGD into the  
11 ground, or 819 gallons per minute in the ground.  
12 The proposal contemplates a minimum that  
13 correlates to roughly the 5 million gallons a  
14 day just as an operational trigger. Again, it's  
15 difficult to try and squeak water in at, you  
16 know, even in this instance, 162 or 196 or  
17 126 gallons per minute and then following that  
18 event, just simply have to redevelop it back  
19 out, it doesn't necessarily provide a net  
20 benefit. And also there's residence time in the  
21 pipelines and a couple other operational  
22 considerations where basically 5 MGD represents  
23 kind of an operational minimum where it's  
24 physically -- our physical capacity to get into  
25 the pipeline, up and around the horn and into

1 the wells that we want to recharge and to have  
2 capacity, it just takes roughly 5 MGD to do that  
3 to keep the whole system moving.  
4 Q. So based on this, would you anticipate if you  
5 were to review the 2016 accounting report there  
6 would be no recharge for 2016?  
7 A. No, not at all, not at all. So, remember, the  
8 City's goal here is sustained recharge values.  
9 So recharge basin 36 has been a nice wide spot  
10 in the road. Unfortunately, water levels in  
11 that area are extremely high and the retention  
12 rate at recharge basin 36 in terms of if we put  
13 water in the ground, how much of that ASR credit  
14 do we actually retain is not very high.  
15 The other piece of it is the wells can  
16 take -- I think as I mentioned before, we can  
17 inject at 1200 gallons per minute, we just can't  
18 do it for a duration that's viable to create  
19 recharge credits. So we can -- we can, as an  
20 example, maybe inject 1200 gallons per minute  
21 for five minutes, but we can't do that  
22 sustainably.  
23 The numbers that are in this report are  
24 from sustainable injection based on actual  
25 observed data. So we have looked at what we

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1 think the wells will actually do based on  
 2 physical, actual observations to come up with,  
 3 hey, if we want to put it in the ground, which  
 4 the City does, can we actually do it based on a  
 5 given water level elevation and how the well  
 6 actually behaves. That's the -- that's the goal  
 7 of this table.  
 8 Q. So if the 2016 annual accounting report has  
 9 roughly 3,000 acre-feet of recharge, you're  
 10 saying that's just because the City will try to  
 11 recharge whenever they can?  
 12 A. No, I don't recall where that recharge occurred.  
 13 My guess would be a big chunk of that would be  
 14 recharge basin 36. I do know that each one of  
 15 the wells -- again, we have a SCADA shutoff that  
 16 is based on a 10-foot level. I have physically  
 17 been at the wells during the commissioning and  
 18 seen wells shut off based on that 10-foot  
 19 adjustment, so I know that that is a limitation.  
 20 That's also for protection of the infrastructure  
 21 at the individual well.  
 22 Q. Well, if you have -- I think on the floor next  
 23 to you are the GMD2 exhibit books.  
 24 A. Sure.  
 25 Q. There's Volume V and it's Exhibit 75, to the

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1 right of you.  
 2 A. Volume?  
 3 Q. Volume V.  
 4 A. Okay.  
 5 Q. Exhibit 75.  
 6 A. What was the exhibit number?  
 7 Q. 75.  
 8 A. Okay.  
 9 Q. And if you are able to flip to page 2-3, it's  
 10 page 2-3, table 2-2 shows the metered recharge  
 11 for 2016.  
 12 A. Okay.  
 13 Q. So based on what you're able to see from the  
 14 2016 accounting report, why do you see such a  
 15 discrepancy between the operations report and  
 16 what actually happened?  
 17 A. Just looking through this, give me a second. So  
 18 I think I can explain what we've got going on  
 19 here in terms of the City's goals. So the  
 20 purpose of AMCs is that we know that recharge  
 21 capacity is physically limited based on the  
 22 actual operation of the wells. In this  
 23 instance, I'm looking at table 2-2 which  
 24 indicates roughly -- and it doesn't discriminate  
 25 between which is Phase I and Phase II, but looks

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1 like the Phase II wells are represented where we  
 2 have roughly 3,000 acre-feet.  
 3 So the City's goal is to build sustained  
 4 recharge credits over time. Again, we have a  
 5 plant that can operate at either 15 million  
 6 gallons a day or 30 million gallons a day. The  
 7 City's job is to build roughly 50 to 60,000  
 8 acre-feet of credits for drought as fast as  
 9 possible. They simply can't do that with the  
 10 existing infrastructure. And their existing  
 11 infrastructure is in this case, ironically,  
 12 hindered by their own water resources  
 13 management.  
 14 So in this instance, we probably have some  
 15 wells that can take water during some events but  
 16 not for a sustained period of time. So perhaps  
 17 for a day or a period of hours, and if you  
 18 repeat that process over a period of days -- or  
 19 a period of hours, you can get to some of these  
 20 totals.  
 21 What I can tell you is from an operations  
 22 management standpoint and the ability to do that  
 23 consistently, it becomes very challenging. It  
 24 also -- again, it's kind of like the eyedropper  
 25 approach to recharge. Is it effective versus

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1 the alternative that the City has to simply pump  
 2 down to create recharge credits? I think  
 3 that's -- that's why we see a discrepancy here.  
 4 It's not that we can't recharge. Maybe I need  
 5 to make that clear for the record, it's not that  
 6 the value is zero. There's nothing that stops  
 7 us from trying to squeak water into the ground,  
 8 but from a practical operations standpoint, from  
 9 a standpoint of creating recharge credits for  
 10 the City to later use at an additional point in  
 11 time relative to drought, it's difficult to do  
 12 with the water levels that we have now. And so  
 13 that was the spirit of the operations plan is to  
 14 reflect how the City can operate during  
 15 sustainable events. So we've had multiple  
 16 events in this case would be my guess why we  
 17 have some more than what's predicted in the  
 18 operations plan, the observed operations plan.  
 19 Q. So at water levels above 1998, ASR Phase II is  
 20 not able to sustainably accumulate recharge  
 21 credits, is that the problem?  
 22 A. Well, it's -- it's maintaining recharge capacity  
 23 with your source water capacity. The two have  
 24 to be compatible for us to -- or the City to  
 25 accumulate credits at a rate that we're actually



1 going to be able to be drought prepared in,  
2 let's say, 10 years or 12 years, whatever the  
3 City's goal is. And that's why we see -- this  
4 table is based on operating the wells in a  
5 manner where they don't shut off after 30  
6 minutes or an hour or a day. We want to have  
7 that capacity, again, day in, day out, we know  
8 that we can send water to that well on this day  
9 based on how the well behaves.

10 In this instance, I believe in 2016 what  
11 the City was doing was running the wells until  
12 they shut off with SCADA. And if they could do  
13 that for a day, water levels go back down the  
14 casing, do it again for the next day. That  
15 would be my guess as why we have some water  
16 levels -- or some recharge capacity in 2016  
17 versus the operations plan.

18 Q. Is there data that shows a drought is imminent?

19 A. I wish I had a crystal ball. I hope not. I'm  
20 not a big fan of drought, not my favorite thing.  
21 So I -- again, I don't have a crystal ball, I  
22 can't predict the future.

23 Q. There seems to be a lot of focus on accumulating  
24 these credits as soon as possible, and I didn't  
25 know if there was data behind that or if it's

1 A. That's correct, the starting level elevation in  
2 the groundwater flow model was based on 1998  
3 conditions.

4 Q. And who recommend 1998?

5 A. We collaborated with the City, the City and  
6 Burns & Mac looked at that, and I feel like 1998  
7 is reasonable. We looked at that kind of  
8 jointly. I didn't specifically do that work, I  
9 didn't model whether the aquifer would take that  
10 much water or not during that time. Do I think  
11 that that is a reasonable number? Yes. Did I  
12 come up with it? No. That was a discussion  
13 with Burns & Mac and the City where we basically  
14 came up with 1998 as a reasonable starting  
15 condition, we think.

16 Q. And for how many years have we been at an  
17 aquifer level that's prevented ASR Phase II from  
18 meeting its intended goal?

19 A. Well, I mean, commissioning the plant roughly in  
20 2013, we had some recharge capacity directly  
21 after drought, certainly wasn't full, sustained  
22 capacity at 30 million gallons a day for the  
23 plant. There was some pretty good recharge when  
24 we had it actually available after the drought,  
25 I believe in maybe 2014, '15, something like

1 merely a preference?

2 A. I think it's just prudent planning from a  
3 municipality standpoint. Whether you're an  
4 individual, a municipality, an industry,  
5 whoever, if you have the opportunity to have  
6 peace of mind to say, yeah, I have this resource  
7 and it's secure and it's a firm source of supply  
8 and I know it's going to be there for my  
9 customers or my family or whoever, I would  
10 rather have that sooner rather than later.

11 Q. Prior to -- do we know, do you know what the  
12 aquifer levels were before the 1930s drought?

13 A. Before the 1930s drought, in the Equus Beds  
14 Aquifer?

15 Q. Correct.

16 A. Would have been probably pretty close to 100  
17 percent full, and predevelopment, really wasn't  
18 much development, to my knowledge. That's been  
19 referred to as predevelopment, there just wasn't  
20 a lot of demand on the aquifer system.

21 Certainly some but largely leaking out of the  
22 sides as fast as it was getting recharged so ...

23 Q. And in simulating the 1930s drought, you chose  
24 to use a declining aquifer level of 1998 rather  
25 than the full aquifer level we had in the '30s?

1 that. And then water levels kept coming up,  
2 frankly, because of the City's management  
3 practices.

4 So even during that time, some part due to  
5 ASR and other portions due to the City's  
6 management practices of taking much less than, I  
7 believe, around 20,000 acre-feet, or even one of  
8 those years was something on the order of, I  
9 think even near 10,000. So pretty good  
10 recoveries within the Equus Beds Aquifer, which  
11 ultimately limit recharge capacity.

12 Q. So why not model a drought based on a more  
13 current aquifer water level?

14 A. You could.

15 Q. Would that not be prudent to -- as if -- if  
16 we're acting like a drought is imminent but  
17 we're starting our drought modeling at a  
18 situation that nowhere represents the current  
19 situation?

20 A. Well, that's the current situation, knowing  
21 that, again, models and predictions and crystal  
22 balls aren't perfect, and also the assumption  
23 that we would have to essentially pump down and  
24 maintain the aquifer at a lower level in order  
25 to achieve physical recharge capacity.

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1 **MS. WENDLING:** I have no further  
 2 questions.  
 3 **PRESIDING OFFICER:** Before we go on,  
 4 since it's been a couple hours, why don't  
 5 we take a quick ten-minute break. You good  
 6 with that?  
 7 **A. No, I just voted for it.**  
 8 **(Thereupon, a recess was taken;**  
 9 **whereupon, the following was had.)**  
 10 **PRESIDING OFFICER:** Okay. We're  
 11 back on the record. And the Intervenor  
 12 just finished cross. Mr. McLeod.  
 13 **MR. MCLEOD:** Thank you.  
 14  
 15 **REDIRECT EXAMINATION**  
 16 **BY MR. MCLEOD:**  
 17 **Q.** I have a little redirect, and I will -- I will  
 18 try to keep it little. Mr. Clement, at times  
 19 during your testimony, both counsel for the  
 20 Intervenor and counsel for the District asked  
 21 you questions about the contingency numbers.  
 22 Was GMD2, the District, were they against the  
 23 idea of having contingency figures with the  
 24 proposal?  
 25 **A. No, not during our collaborative discussion**

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1 **period and time that we were meeting with GMD at**  
 2 **the time, I believe we introduced that idea. We**  
 3 **introduced the idea of adding contingency**  
 4 **knowing that the goal of the project was to set**  
 5 **proposed bottoms that were appropriate for the**  
 6 **project, knowing that we are not -- no one has a**  
 7 **crystal ball that is perfect. And I think the**  
 8 **idea may even have come up from GMD2 during that**  
 9 **discussion where we wanted to add enough**  
 10 **contingencies so that we didn't have to revisit**  
 11 **the hearing process and that we felt comfortable**  
 12 **in those bottom numbers.**  
 13 **Q.** So at least the idea, the notion of having some  
 14 contingency was not something that the District  
 15 inherently opposed at that point?  
 16 **A. I think it's possible that either Tim Boese or**  
 17 **DWR during one of those meetings introduced that**  
 18 **concept.**  
 19 **Q.** Now, Mr. Stucky asked you several times about  
 20 different things that you had done working with  
 21 Mr. Boese and working with the District during  
 22 your years at the Groundwater Management  
 23 District. Was any of your work during your time  
 24 at the Groundwater Management District focused  
 25 on aspects of ASR such as setting or resetting

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1 the 1993 index level?  
 2 **A. Yes.**  
 3 **Q.** And can you tell us about that in greater  
 4 detail?  
 5 **A. Sure. So I wasn't involved in the original**  
 6 **permitting of the project, either ASR Phase I or**  
 7 **Phase II. My time was -- at GMD was after that.**  
 8 **However, as part of the development of the lower**  
 9 **index levels, one of the things that was**  
 10 **identified is there was a mixup during the**  
 11 **original setting of the levels for both ASR**  
 12 **Phase I and Phase II for the lower index levels,**  
 13 **that there was a mixture of the upper aquifer**  
 14 **levels used and the lower aquifer levels used,**  
 15 **and there was a discrepancy in head difference**  
 16 **at some of those index well locations.**  
 17 **And so at the time, the City, myself being**  
 18 **a GMD staffer, DWR, and I think to some extent**  
 19 **the USGS got together and said, it looks like**  
 20 **there are some discrepancies in these levels,**  
 21 **can we make them uniform and set to the lower**  
 22 **index level? And we also identified that there**  
 23 **might be some additional data from, let's say,**  
 24 **October of 1992, which would have been very**  
 25 **close to 1993 levels of January, and then even**

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1 **as late as potentially March of 1993, there**  
 2 **would still be respective or approximating of**  
 3 **the gradient that was 1993.**  
 4 **So during that period, myself at GMD2**  
 5 **reviewed revisions to those water levels. I**  
 6 **believe revisions to those water levels happened**  
 7 **through a findings and order of the chief**  
 8 **engineer after we collaboratively reviewed the**  
 9 **new available information and corrected the,**  
 10 **again, some of those offsets between upper and**  
 11 **lower aquifer at various monitoring wells, index**  
 12 **wells.**  
 13 **Q.** So in terms of the new available information  
 14 that you reference, at that point in time, did  
 15 you have information available for measurements  
 16 taken at index wells?  
 17 **A. No, sir. The index wells did not exist during**  
 18 **1993.**  
 19 **Q.** And the time when you were working on the  
 20 revisions, the 2010 to 2013 time frame, I think  
 21 you indicated you were working with the  
 22 District, did you have any further or helpful  
 23 information from index wells at that point as  
 24 they might relate to the '93 levels?  
 25 **A. Not specifically the index wells themselves. We**

1 did find some, I believe, static measurements  
2 from other City wells, in other words more data  
3 that wasn't included in the original data that  
4 was used back when the project was first  
5 conceived for Phase I. So we had additional  
6 data points to effectively make that groundwater  
7 gradient or our interpretations better  
8 potentially than what was done in the original  
9 interpretation to set the levels back when ASR  
10 Phase I was originally conceived.

11 Q. Without index wells in 1993, how were those  
12 lower index levels determined?

13 A. So we used each one of those points in space  
14 that is an observation point, we brought that  
15 into a program called GIS, or graphical -- or  
16 Geographic Information System. With Geographic  
17 Information Systems, you can use what's called  
18 interpolation, so you build a map based on the  
19 known points.

20 It's reasonable to assume, let's say as an  
21 example just so we can all come to a conclusion  
22 what interpolation is, if you have a point on  
23 the left side that's 10 feet and a point on the  
24 right side that's 5 feet, it's logical to  
25 include -- or conclude that somewhere in between

1 have a multitude of things we can do to improve  
2 on that observed data, but still you're looking  
3 at an error, it's not on observed point. We  
4 think that, thinking back to the data, maybe  
5 plus or minus 2 feet, something of that  
6 magnitude with the interpolated data we had.

7 Q. Moving to something completely unrelated,  
8 Mr. Stucky, last time when we were here in  
9 December asked you kind of an open-ended  
10 question about whether one of the hydrographs or  
11 the summary of the hydrographs showed that of 38  
12 index cells 21 would not get below the 1993  
13 levels, and I think you answered at the time  
14 that that was correct. And I just wanted to ask  
15 you for clarification, is that always correct,  
16 or did you mean that that was correct for the  
17 period of an eight-year drought?

18 A. Ask the question one more time for me.

19 Q. The premise that of the 38 index cells, 21 would  
20 not get below the 1993 levels, a premise that I  
21 think you agreed with, did you mean to confine  
22 that to the model period of the eight-year  
23 drought?

24 A. Yeah, just for that particular simulation. It  
25 doesn't mean that we could necessarily not go

1 those two is a 7 or an 8, that's interpolation.  
2 You're making a guess as to what the gradient is  
3 between those two points, except we do this on a  
4 scale with many, many, many, many points, as  
5 much as we can get that we feel like the data is  
6 accurate.

7 So we made an interpolated map of what we  
8 thought the groundwater gradient was during  
9 January of 1993. And then for the index well  
10 sites which didn't exist, we simply looked up  
11 within the map we made what was the predicted  
12 elevation of the map at that particular location  
13 for the index wells to set the new elevations.  
14 In general, I would anticipate during that  
15 process, which involved DWR, again GMD2, USGS,  
16 multiple reviews, we came up with values that  
17 were, again, maybe plus or minus a few feet,  
18 2 feet, something of that order, we think, based  
19 on the data that we had available.

20 Q. So even in those estimates, there was some  
21 imprecision in pinpointing where those water  
22 levels would have been?

23 A. Absolutely. When doing an inter --  
24 interpolation, it's not perfect, it's a guess on  
25 what's occurring between those two points. We

1 below that value in some other scenario, just  
2 for this particular scenario that we -- that we  
3 modeled.

4 Q. Okay. That may seem like a tiny clarification,  
5 but that seemed to be hanging out there.

6 In the testimony today, Mr. Stucky asked  
7 you questions about the 120,000 acre-foot cap  
8 that is part of the proposal. What is the cap  
9 on accumulation of credits currently?

10 A. None that I know of.

11 Q. And also a series of questions that compared the  
12 proposal to a party filing an application for a  
13 new water right that would need to be perfected.  
14 Is the City seeking an increased allocation  
15 here?

16 A. Not that I believe. Again, the City is bringing  
17 new water to the table. As part of the  
18 proposal, we are capturing transient water from  
19 the Little Arkansas River. In my opinion,  
20 that's why it is not the same as safe yield or  
21 sustainable yield or management of the system or  
22 a new appropriation. It is the City capturing  
23 that water right from surface water. With  
24 respect to a new appropriation of groundwater,  
25 it is not; it is establishing a credit in the

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1 **ground that the City built.**  
 2 Q. And to the extent that the District might  
 3 complain that using those credits in future  
 4 periods allows the City to withdraw more than  
 5 its native rights in those periods, don't the  
 6 physical credits already allow the City to do  
 7 that if it can accumulate enough?  
 8 **A. That is correct.**  
 9 Q. Again, a fairly open-ended question in the  
 10 cross-examination today, the posit was whether  
 11 the City could by building more basins or wells  
 12 increase its recharge capacity, and I think you  
 13 agreed that in the abstract that was true. Does  
 14 the usefulness of that and whether that's real  
 15 recharge capacity depend on whether there's a  
 16 place to put the water that we would recharge  
 17 with those wells?  
 18 **A. Yes.**  
 19 Q. There was a series of questions by Mr. Stucky on  
 20 how and whether you had adequately taken into  
 21 account the possible impact of individual  
 22 pumping under multi-year flex plans. Is that  
 23 uncertainty one of the purposes that's addressed  
 24 by the contingency?  
 25 **A. Yes.**

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1 Q. You were asked by Mr. Stucky about a series of  
 2 errors several places in the proposal, including  
 3 one error where there was a suggestion that the  
 4 modeling scenario would begin with Cheney 110  
 5 percent full, and particularly Mr. Stucky asked  
 6 you why after Mr. Boese had noticed that error  
 7 and called it to the City's attention and  
 8 Mr. Barfield had also noticed the error and  
 9 called it to the City's attention it was not  
 10 corrected. Does the fact that Mr. Boese noticed  
 11 the error and that Mr. Barfield also noticed the  
 12 error and then your own observation that the  
 13 167,000 acre-foot figure tied to 100 percent  
 14 suggests that that would have been an obvious  
 15 error to anyone such that going through the step  
 16 of formally correcting it was not that  
 17 significant a task?  
 18 **A. Yeah, I think that's accurate based on, I**  
 19 **believe it was figure 2 and the 167,000, to my**  
 20 **knowledge, I believe that's a typo.**  
 21 Q. In each of the instances recited where there  
 22 were errors in tables in the proposal, did those  
 23 errors have any impact on the actual modeling,  
 24 or were they simply errors in stating the  
 25 tabulated results?

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1 **A. They were simply errors in stating the tabulated**  
 2 **results. They do not impact the proposed levels**  
 3 **or the modeling results.**  
 4 Q. There was a question asked by Mr. Stucky, I'm  
 5 not sure that I heard it accurately, but I  
 6 thought he asked whether the City was -- was  
 7 saying it would lower aquifer levels to the 1998  
 8 levels to allow for physical recharge and then  
 9 be rewarded with AMCs. I may have misunderstood  
 10 that, but isn't -- isn't the purpose of the AMCs  
 11 to avoid the City needing to actually bring the  
 12 aquifer down to the 1998 levels for physical  
 13 recharge?  
 14 **A. That is the concept, yes.**  
 15 Q. And so one consequence, if the AMCs were  
 16 approved as an element of the City's proposal,  
 17 is the City would not need to make that  
 18 reduction in the aquifer to the 1998 levels to  
 19 get credits, correct?  
 20 **A. Yes, to establish physical recharge capacity,**  
 21 **that would be correct.**  
 22 Q. In terms of whether -- whether in the abstract  
 23 pumping 60,000 feet of credits or 120,000  
 24 acre-feet of credits would have a greater impact  
 25 on the aquifer, you agreed with counsel that

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1 pumping the 120,000 acre-feet, if it could be  
 2 done, would have a greater impact on the  
 3 aquifer. To the extent that the City would have  
 4 60,000 acre-feet of credits, or for that matter,  
 5 let's say, 120,000 acre-feet of credits  
 6 accumulated, what does that presuppose, what are  
 7 the only conditions that could have allowed that  
 8 to occur?  
 9 **A. The City would have had to establish those**  
 10 **credits in the first place, either through**  
 11 **physical injection or through the ASR, AMC**  
 12 **proposal. Those credits would have had to exist**  
 13 **for the City to be able to even contemplate**  
 14 **taking them.**  
 15 Q. And in each case, meaning that in an earlier  
 16 period the City either put or left an equivalent  
 17 amount of water, acre-feet of water in the  
 18 aquifer, correct?  
 19 **A. Correct.**  
 20 Q. Ms. Wendling asked you about the contrast  
 21 between the example operational report and the  
 22 proposal for the year 2016 and the accounting  
 23 report figures that we show for the year 2016 in  
 24 terms of the 3,000 or so acre-feet recharged by  
 25 City wells in 2016 shown by the accounting

1 report. If you would turn to section 2.2 of the  
2 accounting report for that year, I think that's  
3 page 2-1 of that report.  
4 **A. I have arrived at page 2-1.**  
5 Q. In the section quantity of water available, what  
6 does that reflect about the number of days  
7 during 2016 that the Phase I wells and the Phase  
8 II wells could operate consistent with their  
9 permit conditions?  
10 **A. I'm going to read directly from what looks like**  
11 **Exhibit 75 on page 2-1, the quantity of water**  
12 available, section 2.2: Based on the daily  
13 average flow data from the U.S. Geological  
14 Survey, Highway 50 gage, streamflow exceeded the  
15 minimum limit for Phase I diversion and recharge  
16 operations a total of 167 days in 2016. Based  
17 on the daily average flow data from the USGS  
18 Valley Center gage, streamflow exceeded the  
19 minimum permit limit for Phase II diversion and  
20 recharge operations a total of 232 days during  
21 calendar year 2016.  
22 Q. And going on to the next page, what does the  
23 carry-over part of that paragraph tell us about  
24 the number of days they were actually able to  
25 operate the Phase II system during 2016?

1 **A. It looks like in the last -- well, this would be**  
2 **at the top of the page, last sentence, during**  
3 **the operational season from April 15th to**  
4 **October 15th, all of these operational**  
5 **considerations were met and the Phase II system**  
6 **was operated a total of 129 days in 2016.**  
7 Q. So then when we look back at table 2.2, that  
8 3,026.94 acre-feet of recharge by the Phase I  
9 and Phase II wells, that's spread over the  
10 entire accounting year, correct?  
11 **A. Yes.**  
12 Q. And can you -- this may be something you can't  
13 do without a calculator, but can you ballpark  
14 for us for the wells that are actually operating  
15 there, contributing to that recharge, what did  
16 each -- what did each well on the average  
17 actually manage to contribute, if you divided  
18 that recharge by the wells that are  
19 participating?  
20 **A. Well, I don't have a calculator in front of me,**  
21 **but the way you would approach that as a**  
22 **comparison would be to divide the acre-feet by**  
23 **the total number of operational days available,**  
24 **in this case we just discussed 129, I believe,**  
25 **and divide those essentially to get -- and then**

1 **apply the conversion from acre-feet to gallons**  
2 **to get a rate that would be understandable.**  
3 Q. And that would -- the 129 days would encompass  
4 Phase II, which when you look at the recharge  
5 figures, most of the well recharge is coming  
6 from the Phase II wells, correct?  
7 **A. That appears to be the case. There is a small**  
8 **amount of recharge to the Phase I wells, but**  
9 **relative to the 3,000 number, it is very small.**  
10 **MR. MCLEOD:** I don't have further  
11 questions for the witness. I would say  
12 that after the District's and Intervenor's  
13 experts testify we reserve the right to  
14 bring this witness back in rebuttal, if  
15 need be.  
16 **PRESIDING OFFICER:** Mr. Oleen.  
17 **MR. OLEEN:** One line of questioning.  
18  
19 **RE CROSS EXAMINATION**  
20 **BY MR. OLEEN:**  
21 Q. Mr. Clement, I want to go back to a question  
22 that I think you asked -- or answered a couple  
23 times, but most recently you were asked by  
24 Mr. McLeod whether there -- under the current  
25 ASR Phase II permits, whether, to your

1 knowledge, there's any condition that limits or  
2 puts a cap on the total number of recharge  
3 credits that Wichita can accumulate. Do you  
4 remember that question?  
5 **A. Yes.**  
6 Q. And your answer was no, correct?  
7 **A. There is not currently a permit condition that**  
8 **would cap the amount of recharge credits that**  
9 **could be accrued on the City's permits, to my**  
10 **knowledge.**  
11 Q. So just to be clear, then, and follow the  
12 implications of that answer, assuming that the  
13 City operates in compliance -- assuming -- let  
14 me start over, please. Assume we stay under the  
15 current ASR Phase II permits and their  
16 conditions, assuming the City operates in  
17 compliance with those permit conditions and  
18 otherwise operates in compliance with applicable  
19 water laws, could the City conceivably over a  
20 certain period of time accumulate 250,000  
21 recharge credits? Or 200,000 or 300,000?  
22 **A. I mean, under the existing permit conditions,**  
23 **there is no cap. I don't know if I could speak**  
24 **to the hydrogeologic capacity of the system to**  
25 **hold that many credits under a hypothetical**

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1 **simulation without doing, you know, some math**  
 2 **and modeling, but, I mean, under the existing**  
 3 **permit conditions, certainly the City could if**  
 4 **they had the capacity to and wanted to.**  
 5 Q. And the proposed 120,000 cap that the City is  
 6 proposing as part of their AMC accounting  
 7 request, that is something that Wichita  
 8 voluntarily proposed; is that true?  
 9 **A. Yes.**  
 10 Q. If as a result of the chief engineer's final  
 11 determination, let's assume the concept of AMCs,  
 12 the accounting concept is not approved, but  
 13 let's assume that the other main concept of this  
 14 proposal, lowering the minimum index cell  
 15 levels, or, quote, the bottoms, let's assume  
 16 that that portion is approved by the chief  
 17 engineer, is it your understanding that as the  
 18 proposal is offered, there would not be the  
 19 120,000 acre-foot cap if only the minimum index  
 20 cell level request portion of the proposal were  
 21 approved?  
 22 **A. I think that's consistent with what we have in**  
 23 **the proposal. If we are stuck or bound to the**  
 24 **current accounting process and physical ASR**  
 25 **recharge, then the accounting process, I think,**

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1 **covers how those credits would be accumulated.**  
 2 **I think you would have to ask the owner of the**  
 3 **project for their opinion on whether that permit**  
 4 **condition would apply or not. It's not a permit**  
 5 **condition right now, if we're stuck with**  
 6 **physical recharge capacity as the only means to**  
 7 **do that. I don't know that 120,000 either way,**  
 8 **I'm not the owner of the project, so I can't**  
 9 **speak to that permit condition. If that answers**  
 10 **the question.**  
 11 **MR. OLEEN:** Thank you, no further  
 12 questions.  
 13 **PRESIDING OFFICER:** Mr. Stucky.  
 14  
 15 **RE CROSS EXAMINATION**  
 16 **BY MR. STUCKY:**  
 17 Q. Just a handful of quick questions. First of  
 18 all, Mr. Clement, can you point me to the  
 19 written document, whether it be an email or a  
 20 letter, that exists that tells us that the  
 21 District or Mr. Boese introduced the concept of  
 22 a contingency?  
 23 **A. No, the best I have is my memory during those**  
 24 **meetings. That's the best I have, at least in**  
 25 **my personal records that I know of is my memory.**

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1 Q. With respect to table 2-5, it shows that the  
 2 conservation pool of Cheney increases during the  
 3 drought. Is that a true statement as far as  
 4 what we show in table 2-5, if you look in that  
 5 second-to-last row, it shows that in certain  
 6 years it identifies that a conservation pool  
 7 would actually increase during certain years of  
 8 the drought. Is that a true statement?  
 9 **A. That's accurate.**  
 10 Q. So would that suggest that there is water, then,  
 11 flowing into Cheney Reservoir, at least during  
 12 some years of the drought?  
 13 **A. Yeah, sure.**  
 14 Q. So if in this modeling we are showing that some  
 15 water flowed into Cheney Reservoir during this  
 16 model drought, why would there not also be water  
 17 flowing into the river during this model  
 18 drought?  
 19 **A. There is -- which model -- what are you**  
 20 **referring to?**  
 21 Q. Well, if we replicate years 2011 and 2012 over  
 22 the course of eight years, we learn that the  
 23 minimum desirable streamflow would remain the  
 24 same, so my question is that if the conservation  
 25 pool in Cheney Reservoir is increasing during

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1 this simulated drought, shouldn't there also be  
 2 changes in the river flow that are more  
 3 significant than just based on replicating 2011  
 4 and 2012 over the course of eight years?  
 5 **A. Okay, thank you, you specified which model we**  
 6 **were talking about so I can -- I can answer to**  
 7 **the Equus Beds groundwater model which I think**  
 8 **you're referring to.**  
 9 **From a standpoint of, again, reviewing what**  
 10 **is a reasonable bottom for the project, we could**  
 11 **try and emulate a specific event or flow event,**  
 12 **we could try and target that. The purpose of**  
 13 **looking at sustained drought levels, and I**  
 14 **believe as you even previously asked in some**  
 15 **other questions, is don't we anticipate it to**  
 16 **continue to be actually drier? In my**  
 17 **experience, with this system being very much**  
 18 **affected by groundwater pumping, there is an**  
 19 **interrelationship between river flows and**  
 20 **groundwater with both rivers. We wanted to**  
 21 **acknowledge the fact that we think we should be**  
 22 **more conservative in planning for drier**  
 23 **conditions, not necessarily one event that is**  
 24 **like a refill event in Cheney. In reality, I**  
 25 **think it would be just -- just as prudent**

1 planning and maybe perhaps more accurate to  
2 continue the river flows as we did in 2011 and  
3 2012, sustained low flow conditions for a  
4 conservative estimate of what could happen  
5 during 1 percent drought.

6 Q. And just to sum up, although it's possible there  
7 could be some flow into the rivers during this  
8 modeled drought or the river could dry up,  
9 neither of those situations was accounted for  
10 because the idea of replicating 2011 and 2012  
11 was what you perceived as the best fit; is that  
12 right?

13 A. That's correct. If you talk to three different  
14 modelers on the same day about how they approach  
15 a situation, generally you're going to get a  
16 slightly different answer, that's just the  
17 nature of modeling.

18 Q. With respect to figure 14, why are the recharge  
19 basins not included in the numbers shown in  
20 figure 14?

21 A. Let me flip to that real quick for you. What  
22 page is that on again?

23 Q. It is on --

24 A. 3-12, I found it.

25 Q. Yeah, page 3-12.

1 keep in mind that the City has to take that at a  
2 later point in time. If we, as an example,  
3 targeted recharge basin 1 and recharge basin 2  
4 as targets for the water supply component of  
5 this, as the drought component of this, then we  
6 would also have to take water during times of  
7 drought from that area. And being critical, as  
8 the City said, and one of its management goals  
9 is to continue ASR Phase I in its role as a  
10 water quality protection system, more so than a  
11 drought mitigation system; in other words, if we  
12 put water at recharge basin 2 or recharge basin  
13 1, we've got to pull it back out of the ground  
14 if its role is water supply. So that's why we  
15 didn't count those three basins of the system.

16 Q. Can Phase II recharge water be put into recharge  
17 basin 2?

18 A. Sure, the piping is there to do that.

19 MR. STUCKY: Finally just as, I  
20 guess, a housekeeping matter, I think at  
21 least two of the parties discussed the  
22 District's Exhibit 75, so I'm just going to  
23 go ahead and formally move to admit the  
24 District's Exhibit 75.

25 PRESIDING OFFICER: Any objection?

1 A. So currently from an operations standpoint, if  
2 you are the City of Wichita, let's put ourselves  
3 in their shoes for just a moment, your job, your  
4 goal is to build water supply for your customers  
5 for that drought demand using ASR credits. We  
6 have available to us currently recharge basin 1,  
7 recharge basin 2, and recharge basin 36.

8 The geographic location of those basins is  
9 very important for the discussion today.

10 Recharge basins 1 and 2 are located in Phase I,  
11 which as we discussed had some water quality  
12 protection components in those areas. The other  
13 aspect of that would be recharge basin 36, which  
14 I believe we previously discussed. The water  
15 injected at those locations does not stay there  
16 very long simply because we are very close to  
17 the river and things generally are maintained at  
18 fuller conditions. So it doesn't benefit either  
19 the City or other water users to have recharge  
20 basin 36 continue to be recharged only to see  
21 that water simply pushed back out to the Little  
22 Arkansas River, there's just not a net benefit  
23 from doing that.

24 Conversely, putting water at a location for  
25 the purpose of building drought water supply,

1 MR. OLEEN: May I just have a moment  
2 to look at this --

3 PRESIDING OFFICER: Sure.

4 MR. OLEEN: -- Exhibit Number 75?  
5 If I could ask for some clarification from  
6 Mr. Stucky, my tab GMD2 binder Number 75  
7 begins with a letter dated April 11, 2019?

8 MR. STUCKY: Yeah, that's correct.  
9 It's an accounting report, and there's a  
10 introductory letter, I think, regarding  
11 that accounting report.

12 MR. OLEEN: Okay. And I just wanted  
13 to be clear whether that introductory  
14 letter was part of what you're proffering?

15 MR. STUCKY: Yes.

16 MR. OLEEN: Okay. No objection.

17 PRESIDING OFFICER: Exhibit GMD  
18 Exhibit 75 will be admitted.  
19 (GMD Exhibit Number 75 Marked for  
20 Identification.)

21 PRESIDING OFFICER: Ms. Wendling.

22  
23 RE CROSS EXAMINATION

24 BY MS. WENDLING:

25 Q. I believe Mr. Stucky just asked you about figure

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1 14 and recharge basin 36, and you said it's not  
 2 included because there's no net benefit to using  
 3 recharge basin 36 based on its location?  
 4 **A. I wouldn't say zero net benefit, but if you look**  
 5 **at -- put yourself in the shoes of a**  
 6 **municipality trying to build drought resiliency,**  
 7 **you're going to want to put water where you can**  
 8 **actually recover it long-term and where it has**  
 9 **the best retention rates. And for the City,**  
 10 **that's largely in the core of the well field,**  
 11 **not necessarily in the fringes.**  
 12 **RB36 is on the easternmost side of the well**  
 13 **field, so when we put water there, it's a great**  
 14 **wide spot in the road to put water, but the**  
 15 **retention rate of that water is relatively low,**  
 16 **especially during high groundwater conditions**  
 17 **that we have now. And there's only a number of**  
 18 **wells in that location that could actually go**  
 19 **and actually recover those credits. So it's**  
 20 **just not a strategic advantage point for either**  
 21 **the City or really a water level benefit for**  
 22 **others to continue to put recharge to basin 36,**  
 23 **at least from a holistic standpoint that we'd be**  
 24 **forced to put it there under an operational**  
 25 **plan, where we could actually put it to**

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1 **beneficial use in another location.**  
 2 Q. So are you proposing that recharge basin 36  
 3 would continue to be used?  
 4 **A. Sure, I think it's an opportunity to put water**  
 5 **there; it's just at its capacity, if we biased**  
 6 **at a -- let's say recharge basin 36 has 15 MGD**  
 7 **of capacity. Under an operations plan, well, we**  
 8 **have that capacity, why don't you guys just put**  
 9 **it there? Strategically, it just wouldn't make**  
 10 **sense, it wouldn't provide a benefit to the City**  
 11 **to put that much water in that single location**  
 12 **versus where we actually need it for drought**  
 13 **supply and, frankly, where water level**  
 14 **recoveries in other locations could be more much**  
 15 **beneficial.**  
 16 Q. Okay. So basin 36 would not be used in  
 17 calculating your physical recharge capacity for  
 18 purposes of the AMC accounting?  
 19 **A. Not under the current draft, no.**  
 20 **MS. WENDLING:** Okay, thank you.  
 21 **PRESIDING OFFICER:** Any more  
 22 questions for Mr. Clement? Hearing none,  
 23 you may be excused but you have been  
 24 reserved for rebuttal. Mr. McLeod.  
 25 **MR. MCLEOD:** City next calls

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1 Mr. Paul McCormick.  
 2  
 3 PAUL ANDREW MCCORMICK,  
 4 having been first duly sworn, was  
 5 examined and testified as follows:  
 6  
 7 **DIRECT EXAMINATION**  
 8 **BY MR. MCLEOD:**  
 9 Q. Please state your name for the record.  
 10 **A. Paul Andrew McCormick.**  
 11 Q. Mr. McCormick, give us a little bit of  
 12 information on your educational background and  
 13 any degrees you hold.  
 14 **A. I have a bachelor's in science and geological**  
 15 **engineering from the University of Missouri at**  
 16 **Rolla.**  
 17 Q. Any professional licenses or registrations?  
 18 **A. I'm a licensed professional engineer in Iowa,**  
 19 **South Dakota, Nebraska, Missouri, and Kansas.**  
 20 Q. In the green notebook, which is under the purple  
 21 notebook in front of you, and last among the  
 22 group of documents behind the tab expert  
 23 reports.  
 24 **A. Okay.**  
 25 Q. Is there a document in there that you recognize

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1 as your resume or CV?  
 2 **A. I'm looking. Yes.**  
 3 Q. I'm going to hand the reporter a copy of the  
 4 document to mark as City 28, I believe.  
 5 (City Exhibit Number 28 Marked for  
 6 Identification.)  
 7 **PRESIDING OFFICER:** I'm sorry, I'm  
 8 trying to find where that is in the binder.  
 9 **MR. MCLEOD:** If I may approach the  
 10 hearing officer --  
 11 **PRESIDING OFFICER:** Yes, absolutely.  
 12 **MR. MCLEOD:** -- I will try to help  
 13 with that.  
 14 **PRESIDING OFFICER:** Thank you.  
 15 **BY MR. MCLEOD:**  
 16 Q. Mr. McCormick, did you have some personal  
 17 involvement in the preparation of this document?  
 18 **A. Yes, I did.**  
 19 Q. And, generally, is the subject matter set forth  
 20 herein -- well, let me start with this:  
 21 Approximately what date did you prepare the  
 22 document?  
 23 **A. The CV?**  
 24 Q. Yes.  
 25 **A. This is our file, what we call our long form CV,**



1 so it has been on file for a while. Based on  
2 the years there, it was about a year and a half,  
3 two years ago.

4 Q. Okay. And as of the time that you prepared it,  
5 was it an accurate reflection of your experience  
6 to that date?

7 A. It includes the major projects that I have  
8 worked on. There are many others that are not  
9 on here.

10 Q. And since the date that it was prepared, have  
11 there been significant new projects you were  
12 involved in that would have bearing on this  
13 case?

14 A. Maybe three or four, something like that.

15 Q. Can you tell us about those?

16 A. Yeah, we've developed a new groundwater model  
17 for the City of West Des Moines, Iowa,  
18 developing a new 15 MGD well field for them. I  
19 developed another groundwater model for an  
20 industrial client near the Mississippi River  
21 in -- over by St. Louis. I've done - yeah,  
22 that's in there - additional model review in  
23 Nebraska on the Platte well field model up  
24 there. And that's probably about it since this  
25 resume came out.

1 that drought period.

2 Q. And when you say the existing model, are you  
3 referring to the USGS developed model?

4 A. Yes, the Equus Beds groundwater model.

5 Q. In the course of your work with that model, did  
6 you also use a program called Groundwater  
7 Vistas?

8 A. Yes.

9 Q. And what did that entail?

10 A. Groundwater Vistas is a graphical user interface  
11 that allows -- it just makes it easier to input  
12 and output data from the MODFLOW package. It  
13 gives a graphical interface that you can see a  
14 map and look at what you're -- you're actually  
15 working on rather than just lines and lines and  
16 lines of numbers.

17 Q. So, essentially, it's not changing the  
18 substance, but it's helping to make the model  
19 more user friendly?

20 A. Correct.

21 Q. How did you modify the Equus Beds groundwater  
22 model to evaluate a 1 percent drought event?

23 A. As we talked about, we used the 2011 and 2012  
24 hydrologic conditions repeated for eight years.

25 Q. If the model duration is ten years, what are the

1 MR. MCLEOD: Okay. I will offer the  
2 resume as Exhibit -- City Exhibit 28.

3 PRESIDING OFFICER: Any objections?

4 MR. STUCKY: (Shakes head.)

5 PRESIDING OFFICER: City 28 will be  
6 admitted.

7 BY MR. MCLEOD:

8 Q. Mr. McCormick, what was your role in relation to  
9 the preparation and submission of the City's  
10 proposal that's at issue in this hearing?

11 A. I conducted the modeling and sat in on concept  
12 development and provided input throughout the  
13 process, and that's probably it.

14 Q. Did you have prior experience with the model  
15 that was used for drought modeling in this case?

16 A. Yes.

17 Q. How was the MODFLOW groundwater flow model used  
18 for the drought modeling developed in this case?

19 A. As has been described, we took the existing  
20 model and repeated the 2011, 2012 hydrologic  
21 conditions for eight years and then added two  
22 years of the hydrologic conditions from 2010  
23 onto the end of it, and we ran that model to  
24 forecast what the water levels would be after --  
25 or the lowest water levels that we'd see during

1 other two years in the model?

2 A. Those are considered normal, a normal year,  
3 denoting the end of the drought and back into  
4 more typical conditions.

5 Q. I think you were present during Mr. Clement's  
6 testimony, and he had recalled that including  
7 those years was somewhat of a collaborative  
8 decision. Is your recollection consistent with  
9 that?

10 A. Yes.

11 Q. In your experience, Mr. McCormick, how widely  
12 used is MODFLOW software for simulations and  
13 predictions concerning groundwater conditions?

14 A. MODFLOW is the industry standard for groundwater  
15 modeling. It is the most accepted and used  
16 modeling software out there.

17 Q. In connection with the ASR project, is that same  
18 model used for any other purpose by the  
19 Groundwater Management District and the City?

20 A. We do the annual accounting with it.

21 Q. How many years has that been true?

22 A. Since the model -- we have always used an Equus  
23 Beds model. The older one that was developed by  
24 Nathan Myers was used until this model was  
25 developed. When this model was developed, we

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1 reran all years that the ASR system has been  
 2 operating to compare the results and -- so it  
 3 has evaluated every year that the ASR system has  
 4 been in operation.  
 5 Q. And how close were those results between the two  
 6 models?  
 7 A. I don't have those exact figures to tell you an  
 8 exact error or anything between the two, but  
 9 they were -- they were reasonably close. They  
 10 were within the ballpark that you would ...  
 11 Q. Do you recall, did the chief engineer make any  
 12 retrospective changes based on the new model, or  
 13 was it just a comparison simply for purposes of  
 14 testing the new model against the old?  
 15 A. It was for comparison.  
 16 Q. Counsel asked Mr. Clement, who didn't know the  
 17 answer to this question and so I'm going to see  
 18 if you do, as to whether the 1998 water levels  
 19 represent an average of 91 percent saturation  
 20 across the model cells, do you know if that's  
 21 true or not?  
 22 A. I believe that is what we calculated, yes.  
 23 Q. Does the model account for pumping recharge,  
 24 streamflow, evapotranspiration, and groundwater  
 25 migration?

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1 A. Yes.  
 2 Q. In your opinion, does the model reproduce the  
 3 water level changes in the aquifer to an  
 4 acceptable level of accuracy within the basin  
 5 storage area?  
 6 A. Yes.  
 7 Q. During Mr. Clement's testimony, we looked  
 8 briefly at figure 10, which is part of the  
 9 proposal in the black binder.  
 10 A. Do you happen to know the page number?  
 11 Q. I'm going to say 2-22.  
 12 A. Good memory. Okay, I'm looking at it.  
 13 Q. And can you just walk us through that graphic  
 14 and explain what it's depicting?  
 15 A. It is depicting the water levels at the end of  
 16 the eight-year period of drought, so at the end  
 17 of stress period eight in the model. It's  
 18 giving the index well or index cell number, the  
 19 average remaining saturated aquifer thickness,  
 20 and the -- in feet, and the average aquifer  
 21 condition in a percentage.  
 22 Q. Okay. So this would be -- this would be at the  
 23 close of the last drought stress period but  
 24 before the two years of recovery?  
 25 A. That is correct.

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1 Q. Turning to the subject of ASR accounting, you've  
 2 alluded to the use of the groundwater model in  
 3 that accounting process. Can you describe for  
 4 us how the current ASR physical recharge credit  
 5 accounting process works?  
 6 A. Currently we do two runs of the model. The  
 7 first run does not include any of the ASR  
 8 recharge, the diversion wells pumping, nothing  
 9 put into the recharge basins. Basically what  
 10 would happen if the ASR project did not exist.  
 11 Then we rerun it with all of the inputs for each  
 12 of those things added, so the recharge going  
 13 into the basins, into the wells, diversion  
 14 pumping from the diversion wells, and then we do  
 15 a comparative analysis of the water levels in  
 16 the two, and that tells us the flux between  
 17 these index cells. It allows us to calculate  
 18 the flux between each of those cells and  
 19 determine where the water was moved to due to  
 20 the ASR operations. Since the only change is  
 21 the ASR operations, all of the differences in  
 22 the model are caused by ASR.  
 23 Q. So in a sense, it's as though you take a  
 24 snapshot of the year without ASR and then a  
 25 second with ASR, and you compare the two to

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1 identify the effects of ASR for the year?  
 2 A. Yes, that's a good -- good analogy.  
 3 Q. Included in the process, you have factors for  
 4 water leaking out of the aquifer into the  
 5 adjacent rivers?  
 6 A. Yes.  
 7 Q. And factors that address the movement or  
 8 migration of water between index cells?  
 9 A. Yes. It also accounts for movements out of the  
 10 basin storage area and on through the aquifer in  
 11 other parts of the model.  
 12 Q. And we need to do that because not all of the  
 13 water we inject stays in the basin storage area,  
 14 correct?  
 15 A. That is correct.  
 16 Q. What percentage on average has been retained in  
 17 the basin storage area during the period of time  
 18 the ASR system has been in operation?  
 19 A. I believe it's between 80 and 85 percent.  
 20 Q. Are the losses uniform across the basin storage  
 21 area, or do they vary geographically?  
 22 A. They vary geographically. The groundwater  
 23 gradient and flow is from west to east. So  
 24 water that is put in on the east side of the  
 25 basin storage area basically has nowhere to go

1 but flow out; it either flows out to the Little  
2 Ark River or out into the aquifer outside the  
3 basin storage area, if it's not used within the  
4 storage area. Water injected or recharged on  
5 the west side of the basin storage area is held  
6 back by downstream injection and moves more  
7 slowly into other cells.  
8 Q. If you would go to figure 15 in the proposal.  
9 A. Okay.  
10 Q. Walk us through what that graphic is depicting.  
11 A. This is the proposed AMC annual recurring credit  
12 loss. The cells in blue are -- would be a 1  
13 percent annual loss, the cells in green would be  
14 a 3 percent annual loss, and the cells in orange  
15 would be a 5 percent loss. And that's  
16 reflective of that gradient in the flow to the  
17 east, with a greater loss the farther the water  
18 moves to the east.  
19 Q. Okay. Let me back up a little bit and ask you a  
20 few more questions about the physical recharge  
21 credits. How often is the accounting process  
22 for physical recharge credits done?  
23 A. Annually.  
24 Q. And what time of year generally?  
25 A. The report is generally due August 1st, it

1 the State?  
2 A. Yes, I submit copies to DWR and GMD  
3 simultaneously.  
4 Q. And do they then have an opportunity to review,  
5 and by they I mean the District, does the  
6 District then have an opportunity to review the  
7 report and offer their own comments to the  
8 State?  
9 A. Yes, they do.  
10 Q. With the proposed aquifer maintenance credits  
11 where we -- where we don't have injection of  
12 physical recharge, how does the proposed  
13 accounting procedure for the AMCs differ from  
14 the physical recharge credit accounting method?  
15 A. As we talked about with the two snapshots, the  
16 physical recharge, we know where it went in the  
17 ground, we know what wells it went in, we have  
18 meters telling us how much went in the ground.  
19 Obviously we can't do that with AMCs because  
20 they never actually went in the ground.  
21 So the proposed accounting method  
22 distributes them amongst the operating wells  
23 that year, the -- the wells that the City of  
24 Wichita actually had in operation. If a well is  
25 down for maintenance, is not operating for the

1 generally gets delayed; there's a lot of data  
2 that has to be compiled for that, and until we  
3 get that data, we can't do anything with it. So  
4 there's a whole process of getting that. It's  
5 usually in the fall of the following year, so  
6 the 2016 report that was referenced earlier was  
7 turned in in the fall of 2017. So there's about  
8 a year delay time.  
9 Q. When a calendar year ends --  
10 A. Uh-huh.  
11 Q. -- the first step would be that you need to  
12 gather the data necessary to run the model --  
13 A. Uh-huh.  
14 Q. -- with and without ASR for that year? What  
15 sort of data needs to be rounded up for that?  
16 A. We need precipitation data, the  
17 evapotranspiration calculations, streamflow  
18 data, and then the big component is the pumping  
19 data from the DWR.  
20 Q. And all of that you need for the entire calendar  
21 year that you're evaluating?  
22 A. That's correct.  
23 Q. When you have run the model and prepared the  
24 report, does it go to the Groundwater Management  
25 District for review and comment when it goes to

1 year, then that would not get included in that.  
2 But the amount that is withdrawn and is eligible  
3 for AMCs is distributed evenly across those  
4 wells as if it had been injected. And then  
5 the -- there's a 5 percent annual loss taken  
6 from that, and then moving forward, the  
7 recurring loss would be taken from that.  
8 Q. Okay. And that brings us back to the figure 15  
9 we were looking at, and my question is how do  
10 you then come up with that figure 15 imputing a  
11 leakage to the aquifer maintenance credits?  
12 A. That was a long process to come up with that.  
13 We'd been talking for a number of years, and  
14 Mr. Boese and DWR and the City and Burns & Mac  
15 had all hoped to find a simpler method so that  
16 we could understand our accounting a little  
17 better. And just to make this process faster,  
18 easier, less expensive, and easier for others to  
19 look at and determine where things went.  
20 Through collaborative discussions, we had  
21 talked about a percentage loss along these  
22 lines, so we went in and we determined if we had  
23 a hole pumped in the aquifer to put water into  
24 and we could inject 30 million gallons a day,  
25 how much water do we retain? We retain 95

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1 percent of that water. So to accommodate that,  
 2 we came up with a automatic annual loss of 5  
 3 percent.  
 4 Then we looked at varying percentages  
 5 across the well field in this sort of  
 6 arrangement but looking from starting with 3, 5,  
 7 and 10, different combinations of that, and we  
 8 plotted that against the actual physical  
 9 recharge history that we had. And if you look  
 10 at figure 16 of the report, we found that the 5  
 11 percent loss with the 1, 3, and 5 annual, which  
 12 averages out to a 3 percent annual, closely  
 13 matched what we see in our history with the  
 14 physical recharge credits.  
 15 Q. Okay. Let's go to that figure 16 on the table  
 16 4-2. So if I understand what you're saying, you  
 17 essentially took the knowledge that you had of  
 18 leakage demonstrated by the physical credits and  
 19 you imputed a like loss to the AMCs?  
 20 **A. That is correct.**  
 21 Q. Is there a relationship between water levels in  
 22 the aquifer and the degree of physical losses?  
 23 **A. Yes.**  
 24 Q. And what is that relationship?  
 25 **A. The physical losses increase the higher the**

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1 **water levels go.**  
 2 Q. Explain to us what we're seeing in figure 16 in  
 3 terms of the two lines that are plotted on this  
 4 graph, what does each of those lines represent?  
 5 **A. The blue line is the plotted line of the actual**  
 6 **cumulative physical recharge credit number; and**  
 7 **the green line is the same -- uses -- is the**  
 8 **proposed AMC method, and we use the actual**  
 9 **injected amounts that we had physically**  
 10 **injected. We recalculated using the AMC method**  
 11 **for comparison so we'd have the same numbers,**  
 12 **amount of water going into the ground or being**  
 13 **accounted for as AMCs. So the blue line that's**  
 14 **shown there is the current physical accounting**  
 15 **process, and the green line is the proposed AMC**  
 16 **accounting process.**  
 17 Q. Based on the same quantities as the physical --  
 18 **A. Based on the same quantities, yes.**  
 19 Q. It appears that the trends follow very closely  
 20 in the early years but diverge more in the later  
 21 years, why is that?  
 22 **A. Most of that is caused by the higher levels**  
 23 **limiting our ability to put water into the**  
 24 **wells. So more water was diverted to the**  
 25 **recharge basins, specifically recharge basin 36.**

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1 **Recharge basin 36 being near the Little Ark and**  
 2 **in the far south area has a substantial loss of**  
 3 **physical recharge. Most of that water flows**  
 4 **away on the order of 50 to 60 percent.**  
 5 Q. Mr. McCormick, what's the -- what's the point of  
 6 the AMCs as an alternative accounting method,  
 7 what benefit does that bring to users of the  
 8 aquifer or the City?  
 9 **A. It keeps the aquifer full. If we don't have to**  
 10 **pump down -- and higher water levels benefit**  
 11 **every user of the aquifer. So if the aquifer is**  
 12 **kept full, then every person using water from**  
 13 **that aquifer is seeing a benefit from it,**  
 14 **whether it's an electrical pumping cost, water**  
 15 **availability, or any hydrogeologic effect from**  
 16 **lowered water levels.**  
 17 Q. There were a few other questions that  
 18 Mr. Clement didn't know the answer to and you  
 19 may or may not, but if you don't, that's fine.  
 20 Counsel asked Mr. Clement how long it would take  
 21 the City to -- or maybe it might have actually  
 22 been Ms. Wendling, one of counsel asked  
 23 Mr. Clement how long it would take the City to  
 24 pump water levels in the aquifer down to the  
 25 1998 levels. Have you done any projections on

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1 that?  
 2 **A. No, not directly targeting that level. And**  
 3 **there's a lot of factors that would weigh into**  
 4 **that as far as how much the City is pumping, how**  
 5 **much surrounding wells are pumping, irrigators**  
 6 **and industry, that sort of thing. And, of**  
 7 **course, what the weather conditions were, how**  
 8 **much natural recharge is entering the aquifer.**  
 9 Q. Do you know whether the City's -- the City's  
 10 treatment plant and blending requirements also  
 11 impact its ability to take water from the  
 12 aquifer as opposed to Cheney?  
 13 **A. That is not my area of expertise, but from**  
 14 **conversations that I have been a part of, I have**  
 15 **heard that said many times by people who that is**  
 16 **their expert -- area of expertise.**  
 17 **MR. MCLEOD:** I don't have further  
 18 questions for the witness.  
 19 **PRESIDING OFFICER:** Mr. Oleen.  
 20  
 21 **CROSS-EXAMINATION**  
 22 **BY MR. OLEEN:**  
 23 Q. Mr. McCormick, have you heard some -- have you  
 24 been here for the entirety of these proceedings  
 25 when they began back in December?

1 **A. No, I have not been here for the entire**  
2 **proceedings.**  
3 Q. Okay. Well, tell me, did you hear some  
4 discussion about under the current ASR Phase II  
5 permit conditions, when the aquifer is  
6 practically full and there isn't room in order  
7 to inject excess Little Ark River flows in order  
8 to accumulate recharge credits that this -- that  
9 type of situation essentially forces the City to  
10 pump space, create space in the aquifer by  
11 withdrawing water therefrom in order to create  
12 sufficient space in order to inject excess river  
13 flows and therefore create recharge credits?  
14 Have you heard that?  
15 **A. Yes, I've heard quite a bit of that, and it's**  
16 **correct, if the bucket's already full, you have**  
17 **to pull something out of it to put more into it.**  
18 Q. I want to know, is there -- is it better in  
19 terms of decreased risk to water quality to  
20 leave a body of water in situ, or in place,  
21 leave it alone, versus to disturb it by  
22 withdrawing a portion of it and then injecting a  
23 portion back into it? And what I -- so what I  
24 mean by this question, then, is given what you  
25 just said you heard about what the City would

1 it's outside the scope of his expert  
2 report. There's no -- there's no opinions  
3 rendered with respect to the City's -- the  
4 effect of the City's proposal on water  
5 quality in this expert's report.  
6 **MR. OLEEN:** May I have a moment to  
7 pull up that report?  
8 **PRESIDING OFFICER:** Sure.  
9 **MR. OLEEN:** Madam Presiding Officer,  
10 Mr. Stucky is correct in that I don't see  
11 some express recitation in Mr. McCormick's  
12 submitted expert report that I just very  
13 briefly skimmed, I don't see an exact  
14 representation of what he's currently  
15 testifying to, but it's Mr. McCormick's  
16 professional stamp and signature on this  
17 ASR permit modification proposal that  
18 we're -- that we're here today discussing,  
19 and one of the explanations for why the  
20 City has said that this new accounting  
21 concept is beneficial, as I understand it,  
22 is that it would negate the need to, quote,  
23 pump the hole in the aquifer and create  
24 space in which to physically inject water  
25 to create recharge credits under the

1 have to do in order to create space in the  
2 aquifer in order to inject more water therein,  
3 that's one option to generate recharge credits,  
4 correct?  
5 **A. Yes.**  
6 Q. Under the City's accounting, proposed AMC  
7 accounting concept, that sort of withdrawal  
8 would not need to occur in order to create space  
9 in which to physically inject water, right?  
10 **A. That's correct.**  
11 Q. So what I want to know is are there increased  
12 risks to water quality of one accounting method  
13 of creating recharge credits versus the other?  
14 **A. Yes. The -- leaving the water in place on the**  
15 **basis of water quality is -- is a better choice.**  
16 **There have been multiple studies done on this**  
17 **ASR project over the years looking at concerns**  
18 **with putting a different water quality into the**  
19 **ground, is that going to mobilize, one of the**  
20 **big ones I know they were concerned about was**  
21 **atrazine.**  
22 **MR. STUCKY:** Madam Hearing Officer,  
23 I'm going to object to this line of  
24 questioning, this witness doesn't even  
25 address water quality in his expert report,

1 current system, the current permit  
2 conditions.  
3 So I think it's, if not expressly stated  
4 in so many terms, I think this concept of  
5 why it's a good idea in the City's opinion  
6 to skip that step of disturbing the  
7 aquifer, I think that's something within --  
8 that's contemplated within the context of  
9 the proposal before us today.  
10 **MR. STUCKY:** I mean, I think we're  
11 here based on the face of the proposal  
12 itself, based on the scope of these given  
13 experts' perceived testimony and what their  
14 expertise is. And if there's no notice  
15 that a given expert is an expert on water  
16 quality and it's not even mentioned in the  
17 proposal, I'm not sure how for the first  
18 time we can show up at a hearing and be  
19 talking about these concepts.  
20 **MR. OLEEN:** I think I know why  
21 Mr. Stucky and the GMD don't like this line  
22 of questioning, and it's because it differs  
23 from the narrative that they're trying to  
24 focus on. And so I expect objections like  
25 this, but I think the public who are being

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1 told certain things about what the proposal  
2 allows or doesn't allow or the consequences  
3 about it, I think this is something  
4 relevant to not only the public's concern  
5 but also yours, if there is a consequence  
6 to forcing the City, as they say that they  
7 will do, to pump the aquifer in order to  
8 create space in the hole to generate these  
9 recharge credits. So if there's a negative  
10 consequence to that versus recognizing this  
11 proposed accounting system, I think it's  
12 very relevant to what we're all here  
13 discussing.  
14 **PRESIDING OFFICER:** I think the  
15 relevance of that concept is not in  
16 question; I agree with you that that would  
17 be important information. The question is  
18 is that information within this witness's  
19 purview of expertise. I've heard him say  
20 he's heard this talked about, this might be  
21 something that is -- that logically makes  
22 sense to him, but I'm concerned about  
23 straying too far from his area of  
24 expertise.  
25 I think the -- if the City has an expert

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1 that could talk more specifically about the  
2 impact on water quality, then that would be  
3 something the City could. I don't know if  
4 that's something they have ready to go, but  
5 if this expert is not -- if this is not  
6 within his area of expertise, I don't want  
7 to stray too far beyond what we've already  
8 heard.  
9 The concept has been described, I think  
10 he has said he has heard people discussing  
11 this, but if he doesn't have specific  
12 knowledge and background and personal  
13 analysis of what it would do to water  
14 quality, I don't think we should stray much  
15 farther into that.  
16 **MR. OLEEN:** I guess part of the  
17 problem is I don't know that it's an expert  
18 question, I guess. If you have a status  
19 quo and then you change the status quo, is  
20 there increased risk to affect the status  
21 quo, and I think the answer is probably  
22 yes. So I guess I'm not even certain it's  
23 a expert -- that it requires certain  
24 expertise.  
25 **A. Is it my place to interject? I'm just asking?**

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1 **PRESIDING OFFICER:** Yes, what would  
2 you like to add?  
3 **A. It is required as part of the permit conditions**  
4 **that we operate under now that water quality be**  
5 **monitored for just this reason. The injected**  
6 **water quality has to be analyzed and reported**  
7 **annually, and my seal is on all of the annual**  
8 **accounting reports that report that. If that**  
9 **helps with where my area of expertise is.**  
10 **PRESIDING OFFICER:** That speaks to  
11 the existing permits and existing  
12 conditions.  
13 **A. The existing permits require that, yes.**  
14 **PRESIDING OFFICER:** But we're  
15 talking about the impact of the proposed  
16 changes.  
17 **A. Right, but the reason that that water quality**  
18 **data is monitored and reported annually is to**  
19 **evaluate any changes to the aquifer water**  
20 **quality. So it's monitoring for the same reason**  
21 **that Mr. Oleen was asking about, are we changing**  
22 **water quality by injecting and removing water?**  
23 **PRESIDING OFFICER:** So what changes  
24 would there be to the monitoring to reflect  
25 changes in the proposal?

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1 **A. There would -- I'm sorry, I don't understand**  
2 **your question.**  
3 **MR. OLEEN:** Well, is it that the  
4 current permit conditions require the  
5 monitoring of water quality because of a  
6 concern that that water quality could be  
7 negatively impacted by this disturbing of  
8 the aquifer via withdrawal and injection,  
9 and if we're not withdrawing and injecting  
10 as part of the creation of recharge  
11 credits, then the concerns that originated  
12 the water quality monitoring are lessened.  
13 Even -- even though the water quality  
14 monitoring may continue.  
15 **PRESIDING OFFICER:** You want to say  
16 something?  
17 **A. I was just going to say that, yes, his statement**  
18 **is correct, the reason the water quality is**  
19 **monitored is to avoid changes to the aquifer**  
20 **water quality caused by the recharge water**  
21 **quality.**  
22 **PRESIDING OFFICER:** And that's a  
23 good thing, but I'm wondering, the  
24 questions are getting toward what changes  
25 do you anticipate by virtue of the

1 proposal, because what you're assuming is  
2 if the proposal doesn't happen, there will  
3 be negative consequences?

4 **MR. OLEEN:** Or a continuation of a  
5 certain amount of risk inherent in the  
6 currently authorized ASR project.

7 **PRESIDING OFFICER:** Has the current  
8 or prior monitoring revealed any such risk?  
9 Has revealed the realization of these  
10 risks? If the status quo is what you're  
11 concerned about, has the status quo shown  
12 increased risk?

13 **MR. OLEEN:** I can't speak to that  
14 other than to say why would it have been a  
15 monitoring -- why would the requirement of  
16 monitoring been a condition that the chief  
17 engineer imposed if there wasn't some risk  
18 associated with the act of withdrawing and  
19 injecting?

20 **PRESIDING OFFICER:** Good point. I'm  
21 going to let this line of questioning  
22 continue, but if we get too specific and I  
23 think we're getting too far, then I'm going  
24 to step in.

25 **MR. OLEEN:** So, Madam Officer, do I

1 **CROSS-EXAMINATION**  
2 **BY MR. STUCKY:**

3 Q. Yeah, I don't disagree with the fact that  
4 taking -- putting water in and out of an aquifer  
5 could have an impact on water quality. I guess  
6 my question for you is did you personally do any  
7 kind of modeling, MODFLOW modeling or otherwise,  
8 to determine the impact of the City's proposal  
9 on water quality?

10 **A. For this proposal?**

11 Q. For this proposal?

12 **A. Not for this proposal, no.**

13 Q. Okay. Thank you. Now, moving on to a prior  
14 discussion that occurred, what -- just so I'm  
15 clear, what work did you do with MODSIM and  
16 Vistas as it relates to the City's data, did you  
17 do any specific work with regard to that?

18 **A. I did not work with MODSIM. I reviewed the**  
19 **inputs and outputs from it and was in on some of**  
20 **the discussions where those were being decided**  
21 **upon. I did all of the MODFLOW modeling, with**  
22 **some assistance from Mr. Clement.**

23 Q. Okay. Now, I'd like to --

24 **MR. STUCKY:** May I approach the  
25 witness?

1 understand that I don't need to repeat any  
2 questions -- let me rephrase. Everything  
3 that Mr. McCormick has just been saying as  
4 part of this discussion is a part of the  
5 record of this hearing?

6 **PRESIDING OFFICER:** Correct.

7 **MR. OLEEN:** Okay.

8 **BY MR. OLEEN:**

9 Q. So just to be clear, then, Mr. McCormick, what  
10 I'm trying to understand, if there are benefits  
11 in the form of decreased risks of water quality  
12 contamination if an aquifer is left in place  
13 versus if an aquifer is disturbed by withdrawal  
14 and injection of water into it?

15 **A. I would say that that is correct, there are**  
16 **concerns that injected water quality could be in**  
17 **some way detrimental. As noted, there have not**  
18 **been to date, but if we're not injecting and**  
19 **pumping out water, then those concerns are gone**  
20 **and there is not that risk.**

21 **MR. OLEEN:** No further questions,  
22 thank you.

23 **PRESIDING OFFICER:** Mr. Stucky.

24 //

25 //

1 **PRESIDING OFFICER:** Yes.

2 **BY MR. STUCKY:**

3 Q. I've handed you, do you recognize that as your  
4 amended expert report?

5 **A. Yes.**

6 Q. Okay. And in your amended expert report, there  
7 is a variety of different opinions that are  
8 expressed. Would that be a true statement?

9 **A. I believe they're my opinions, so I don't know**  
10 **if they're a variety or different but ...**

11 Q. Would you agree that at least your expert report  
12 indicates that your expertise and opinions are  
13 based on what's presented in your expert report?  
14 And if we look at the first page, it says,  
15 subsection C, Paul McCormick's factual  
16 observations and opinions as presented in the  
17 proposal documents and summarized herein  
18 include, and then there's a list of the areas  
19 that you have expertise in?

20 **A. Yes.**

21 Q. Okay. So in answer to my question, would you  
22 agree that at least as it relates to your expert  
23 report, you identified certain areas of the  
24 proposal that we can have some assurance that  
25 you have expertise in; is that right?

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1 **A. Yes.**  
 2 Q. Okay. And, in fact, at least as you indicated  
 3 it in your expert report, your expertise was  
 4 limited based on the areas that you identified  
 5 in the expert report, in your expert report. Is  
 6 that -- is that a true statement? In other  
 7 words, you don't mention MODSIM and doing any  
 8 analysis on growth projections for the City --  
 9 **A. Right.**  
 10 Q. -- and so that's outside the realm of your  
 11 expertise, correct?  
 12 **A. That is correct, yes.**  
 13 Q. And so strategically you've identified certain  
 14 areas with respect to the City's proposal that  
 15 you have expertise, and my question is did you  
 16 do that to -- to identify or limit the areas  
 17 that you could testify to in this hearing?  
 18 **A. My seal is on the proposal, and so I had to**  
 19 **review or be in on discussions for those things**  
 20 **that were in the proposal. So I have some**  
 21 **knowledge of anything that's in the proposal.**  
 22 **These things that I specifically did and**  
 23 **provided work product for are what is listed in**  
 24 **my expert testimony.**  
 25 Q. I'm going to ask you to look at subsection B of

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1 your expert report. Could you read subsection B  
 2 of your amended expert report?  
 3 **A. On page 1?**  
 4 Q. Yes, on page 1.  
 5 **A. The grounds for Paul McCormick's opinions are**  
 6 **knowledge of pertinent information presented in**  
 7 **City of Wichita's response to production request**  
 8 **of Equus Beds Groundwater Management District**  
 9 **No. 2 and City of Wichita's responses to**  
 10 **Intervenors' production requests, as referenced**  
 11 **in the summaries of the respected opinions**  
 12 **below, and in several cases excerpted and**  
 13 **attached for convenience of reference.**  
 14 Q. So that paragraph indicates the grounds under  
 15 which your opinions were based. Is that a true  
 16 statement?  
 17 **A. Yes.**  
 18 Q. Can you explain to me in past work that you've  
 19 done where it is that you have dealt with  
 20 gradational losses previously, or is that kind  
 21 of a newer concept as it relates to the City's  
 22 proposal?  
 23 **A. For the City in particular or anywhere else?**  
 24 Q. Other projects where you've dealt with  
 25 gradational losses?

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1 **A. Project wise, myself, we have never proposed**  
 2 **gradational losses. I have consulted with other**  
 3 **consultants in other states and looked at ASR**  
 4 **regulations in other states where they only use**  
 5 **gradational losses.**  
 6 Q. And how were gradational losses, how were those  
 7 accounted for, in your experience, in other  
 8 projects you worked on?  
 9 **A. What I have seen in literature and discussed**  
 10 **with others and -- is basically they -- they set**  
 11 **a percentage of what you put in the ground is**  
 12 **what you get out, and it's just a fixed percent.**  
 13 **In some places it's a time changing thing.**  
 14 **We -- I've never actually proposed a gradational**  
 15 **accounting system of my own in the past.**  
 16 Q. So just -- and that's my question, just to  
 17 clarify, the City's proposal is unique in your  
 18 experience in the sense that this is the first  
 19 time you're proposing such a concept. Would  
 20 that be a true statement?  
 21 **A. That is the first time I have proposed such a**  
 22 **concept.**  
 23 Q. Okay. In your expert report, which is still in  
 24 front of you for your convenience, you mention  
 25 that you did some work on the 1 percent drought

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1 simulation. Is that a true statement?  
 2 **A. Yes.**  
 3 Q. Okay. And you indicate that the Equus Beds  
 4 groundwater flow model takes into account  
 5 various inputs, including variables for  
 6 increased agricultural irrigation pumping,  
 7 additional City pumping, reduced aquifer  
 8 recharge, reduced streamflow, and increased  
 9 evapotranspiration, slowing down for your  
 10 purposes. Is that stated in your expert report?  
 11 **A. Yes, it is.**  
 12 Q. Just a moment ago, Mr. Clement testified to the  
 13 fact that multi-year flex accounts and term  
 14 permits weren't -- although they were taken into  
 15 account for the years 2011 and 2012, he  
 16 testified that for additional years, there  
 17 weren't changes made to the modeling based on  
 18 changes in multi-year flex accounts or term  
 19 permits. Do you recall that discussion?  
 20 **A. I do.**  
 21 Q. As you're sitting here today, do you believe  
 22 that as we look to improving the model in the  
 23 future, is it possible for the model to take  
 24 into account a concept such as multi-year flex  
 25 accounts over the course of five years or new



1 term permits or things of that nature?  
2 **A. It is possible. I don't know how you would**  
3 **determine it, but it is possible.**  
4 Q. And one variable, I think, that's not noted  
5 there is return flows into the aquifer. Is that  
6 another variable that you considered?  
7 **A. Yes. And, no, I did not list it there, we just**  
8 **consider that as automatically done with the**  
9 **agricultural pumping.**  
10 Q. And would you also agree with the conversation  
11 that occurred earlier that as a drought  
12 prolongs, it's possible that the return flows  
13 could be different than what was modeled for the  
14 years 2011 and 2012?  
15 **A. I would agree with that.**  
16 Q. Is that something that the City could have  
17 addressed in future modeling?  
18 **A. I think it could be addressed by modeling, but I**  
19 **think that the level of error that would be**  
20 **incurred from that would be -- make the results**  
21 **meaningless.**  
22 Q. Let me ask you this: You would agree also with  
23 Mr. Clement's testimony that the pumping by the  
24 City fluctuated over the course of that eight  
25 years. Would you agree with that testimony?

1 course of eight years the City's purported water  
2 use changes based on their projected demands and  
3 as that -- as that morphs over the course of  
4 that eight years, if that changes, are there  
5 data sets available that would help to predict  
6 how an irrigator's use would change over the  
7 course of additional years in a drought? I  
8 understand that there's different crops you can  
9 grow, there's different variables that you can  
10 take into account that if you go to the  
11 individual irrigator make it difficult to  
12 predict the mindset of that irrigator, but,  
13 again, we're talking about statistics and we're  
14 talking about modeling, so are there statistics  
15 and is there a large data set that would help us  
16 to predict what irrigators collectively would do  
17 as a drought increases, that's my question?  
18 **A. We pretty much included that, I mean, we're**  
19 **looking at an average, an annual average of**  
20 **pumping in a -- a drought period, which is 2011**  
21 **to 2012, and we evaluated those statistics. I**  
22 **am not aware of anywhere that we have a database**  
23 **or any indication of what industry and**  
24 **agricultural demands would be for an eight-year**  
25 **drought period, I don't believe that that is in**

1 **A. Yes.**  
2 Q. However, irrigation pumping and other forms --  
3 or industrial pumping and other forms of pumping  
4 that were identified in that table remained  
5 constant for the years 2011 and 2012. Is that a  
6 true statement?  
7 **A. They were the reported values for 2011 and 2012.**  
8 Q. Do you believe that the model could be more  
9 accurate and the modeling could be more accurate  
10 if there was more variables taken into account  
11 with -- with respect to changes in irrigation  
12 pumping and other forms of pumping such as  
13 industrial or other municipal?  
14 **A. No.**  
15 Q. Okay. And what is the basis for that answer?  
16 **A. It becomes a guess. You're guessing what**  
17 **business A is going to -- that they're going to**  
18 **expand; I don't know their business plan.**  
19 **You're guessing that farmer B is going to**  
20 **continue to produce corn and is not going to**  
21 **switch to a less water intensive crop. So many**  
22 **variables come into it that the error, the**  
23 **potential error of your inputs just skyrockets**  
24 **and becomes unacceptable.**  
25 Q. Well, let me ask it this way: If over the

1 **existence. Or if it is, I'm not aware of it.**  
2 Q. Well, for example, do we know as -- for example,  
3 in 2013 and as the irrigators were still using  
4 the multi-year flex accounts, for example, do we  
5 know what their water use was in 2013, for  
6 example? I mean, would that -- would any of  
7 that data be useful to help with the projections  
8 for the City's modeling?  
9 **A. You got to remember we're out of the drought at**  
10 **that point, so there's a much higher**  
11 **precipitation rate, so they're not pumping as**  
12 **much, so that sort of negates that evaluation.**  
13 **If -- you know, obviously if we had continued**  
14 **through a five-year drought, and MYFA is a**  
15 **five-year program, we would have seen what would**  
16 **have happened. But at no time that I'm aware of**  
17 **did we see an actual occurrence of that that**  
18 **would provide a data set that would be useful in**  
19 **that way.**  
20 Q. So I think your testimony is that by replicating  
21 2011 and 2012, you utilized the best data you  
22 had available to you with respect to irrigation  
23 pumping. Is that what your testimony is?  
24 **A. I would say so.**  
25 Q. But at least to an extent, even just by

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1 replicating 2011 and 2012 over the course of  
 2 eight years, aren't you guessing as to what  
 3 irrigation use would be during the course of  
 4 that entire eight-year drought also by  
 5 replicating those numbers?  
 6 **A. Yes, we're making an estimate based on what was  
 7 done in a drought period.**  
 8 Q. With respect to Mr. Clement, and your noted  
 9 expertise also has to do with drought simulation  
 10 and the variables that went into the modeling,  
 11 he indicated that there -- that more efficient  
 12 appliances, better conservation techniques in  
 13 the future, variables of that nature were not  
 14 included in the City's modeling. Would you  
 15 agree with that testimony?  
 16 **A. Yes, I would agree with that.**  
 17 Q. Now, in your expert report, I'm not sure that  
 18 you mention a lot about the development of  
 19 aquifer maintenance credits. You do talk about  
 20 the accounting, but I guess I'll ask you, were  
 21 you involved, were you the one that was involved  
 22 in coming up with the concept of aquifer  
 23 maintenance credits as it relates to the City's  
 24 proposal?  
 25 **A. No. The aquifer maintenance credit idea has**

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1 **been around and been floated around for as long**  
 2 **as I've been with Burns & Mac, so since 2007**  
 3 **that I am aware of personally. I don't know who**  
 4 **initially came up with the idea, and I don't**  
 5 **know that anybody does at this stage of the**  
 6 **game.**  
 7 Q. Was that a concept that originated with Burns &  
 8 Mac, or was that a concept that --  
 9 **A. I have no idea.**  
 10 Q. Do you know why the concept of AMCs was  
 11 developed as early as 2007 or why it's been  
 12 around so long? In other words, my question is  
 13 this, was the City already envisioning the  
 14 possibility of aquifer maintenance credits as  
 15 early as 2007?  
 16 **A. No. No, when -- in 2007 when the system was**  
 17 **first started, there was a big hole in the**  
 18 **ground, we could put all the water we wanted to**  
 19 **in the ground. And, honestly, we weren't**  
 20 **expecting the substantial challenges that we**  
 21 **have now with the higher water levels.**  
 22 Q. Okay. So to answer my question, as ASR Phase I  
 23 and ASR Phase II occurred, this concept of AMCs  
 24 wasn't already envisioned as a future part of  
 25 the ASR project at that time?

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1 **A. No. The first time it was ever brought up as a**  
 2 **real potential part was for this proposal that**  
 3 **I'm aware of.**  
 4 Q. And you have been at Burns & Mac for a long  
 5 time; is that right?  
 6 **A. I started in March of 2007.**  
 7 Q. And so you have some familiarity with, at least,  
 8 ASR Phase II?  
 9 **A. Phase I and Phase II, yes.**  
 10 Q. Okay. And the concept of passive recharge  
 11 credits?  
 12 **A. I'm familiar.**  
 13 Q. Did you ever have the occasion to analyze  
 14 whether or not the aquifer maintenance credits  
 15 were, in fact, a passive recharge credit? Did  
 16 you analyze that, or is that part of your  
 17 purported expertise here?  
 18 **A. We discussed that as part of the development of**  
 19 **the proposal.**  
 20 Q. Was that something that you specifically  
 21 considered or analyzed, other than just  
 22 reviewing the ultimate proposal and signing off  
 23 on it?  
 24 **A. I was in on the discussions, early discussions**  
 25 **when we came up with the idea and were concerned**

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1 **that it would -- we were discussing whether or**  
 2 **not it would be a passive recharge credit and**  
 3 **determined that we did not feel it met the**  
 4 **criteria.**  
 5 Q. Okay. And you heard Mr. Clement's testimony,  
 6 you were in the room --  
 7 **A. Uh-huh.**  
 8 Q. -- so do you agree with Mr. Clement's testimony  
 9 as to -- in that regard as to whether an aquifer  
 10 maintenance credit is, in fact, a passive  
 11 recharge credit?  
 12 **A. I agree that it is not.**  
 13 Q. Okay. And what is the basis for your opinion in  
 14 that regard?  
 15 **A. The -- as -- not to restate Mr. Clement's whole**  
 16 **testimony, but that was taking water from an**  
 17 **alternate source and leaving it in the ground,**  
 18 **in the well field is considered a passive**  
 19 **recharge credit. In this case, we're taking**  
 20 **water -- we're pumping excess water, we're**  
 21 **treating it, we would be putting it in the**  
 22 **ground and then pumping it back out and then**  
 23 **sending it to town. In this case, we're simply**  
 24 **taking the steps out of injecting and**  
 25 **withdrawing, which is beneficial to the aquifer**

1 **and is not a passive action since we're treating**  
2 **it and doing the other things.**

3 Q. Okay. So, again, your idea here is that just  
4 because we're taking water, overflow water from  
5 the Little Arkansas River and we're diverting it  
6 directly to the City and then accumulating this  
7 aquifer maintenance credit, you're saying that  
8 those aren't passive credits in your viewpoint?

9 **A. We're not just diverting it to the City; we're**  
10 **treating it, using the infrastructure that's in**  
11 **place, and then sending it to the City.**

12 Q. With respect to an aquifer maintenance credit,  
13 though, are you first injecting that water into  
14 the aquifer?

15 **A. No.**

16 Q. So after you treat it, would it be true that it  
17 is then sent directly to the City for municipal  
18 use?

19 **A. Yes.**

20 Q. And then after it's sent to the City for  
21 municipal use, an aquifer maintenance credit  
22 would be accumulated. Is that a true statement?

23 **A. I would say an aquifer maintenance credit is**  
24 **accumulated when it is sent to the City.**

25 Q. Yeah. And that was my question, would that be a

1 true statement then?

2 **A. Yes.**

3 Q. So let's say, for example, that we took a gallon  
4 of water from El Dorado Reservoir and we sent it  
5 to our treatment plant there by Bentley and we  
6 treated that water and then we sent it to the  
7 City for municipal use. Do you believe that the  
8 City should get a credit for that water that was  
9 taken from El Dorado Reservoir, treated in  
10 our treatment facility, and then sent to the  
11 City, should the City get a credit for that?

12 **A. El Dorado is a different water source. That's**  
13 **switching sources.**

14 Q. I understand that.

15 **A. We're talking about above base flow water that's**  
16 **just flowing through the system that we're**  
17 **capturing.**

18 Q. So in this scenario of El Dorado, would you  
19 agree that under that scenario, at least, that  
20 would be a passive recharge credit as the term  
21 is used in ASR Phase I and Phase II?

22 **A. Well, I don't think that scenario could -- would**  
23 **occur, there would be no point in doing that.**  
24 **If you were taking water from El Dorado**  
25 **Reservoir and sending it directly to the main**

1 **water treatment plant in Wichita, you're not**  
2 **using the ASR infrastructure, and that would be**  
3 **a passive recharge credit.**

4 Q. Well, let's just say for one second here the  
5 only difference is instead of treating the water  
6 in Wichita, from the treatment facility in  
7 Wichita, you choose to treat the water in the  
8 treatment facility there by Bentley, which is  
9 part of the ASR infrastructure, treatment  
10 infrastructure, and I think you could at least  
11 agree with me that under my hypothetical,  
12 hypothetically speaking, that that's a  
13 possibility that could at least occur. So my  
14 question is not whether you treat the water at  
15 the treatment plant in the City of Wichita, but  
16 if you were to treat that gallon of water from  
17 El Dorado Reservoir in the treatment facility  
18 there by Bentley and then you tried to obtain a  
19 credit for that, would that be a passive  
20 recharge credit?

21 **A. You wouldn't do that because all water going**  
22 **into the City of Wichita goes to the main water**  
23 **treatment plant for treatment prior to going**  
24 **into the distribution system. So you wouldn't**  
25 **send it to -- even if you sent it to the Phase**

1 **II treatment plant, you would treat it there,**  
2 **and then you would send it to the main water**  
3 **treatment plant to treat it again. So your**  
4 **scenario would never occur.**

5 Q. Okay. Well, and I understand under current  
6 policies of the City and current infrastructure,  
7 I understand that that probably wouldn't occur,  
8 but I'm just saying hypothetically if, just so I  
9 can try and conceptualize this, if we took a  
10 gallon of water from El Dorado Reservoir,  
11 treated it at the Bentley facility, and then  
12 used it in the City of Wichita, would one be  
13 allowed to obtain a credit for that gallon of  
14 water that was taken out of El Dorado Reservoir?

15 **A. And, again, I don't think that could happen.**

16 Q. Would you receive a credit for that?

17 **A. I have no idea.**

18 Q. Okay. Well, let me ask you this: Let's say the  
19 water was taken from Cheney Reservoir, which is  
20 what was specifically envisioned with respect to  
21 having, I guess, prophylactic measures to ensure  
22 that we did not have these passive recharge  
23 credits. So with respect to Cheney Reservoir,  
24 if you take 1 gallon of water, treat it in the  
25 treatment facility there by Bentley, and then

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1 use it for municipal use in the City, should the  
 2 City get a credit for that gallon of water?  
 3 **A. I would say no, I wouldn't say -- I would say**  
 4 **the City would never do that because it's a**  
 5 **waste of money.**  
 6 Q. And if they did that, not only would it be a  
 7 waste of money, but it would also be a passive  
 8 recharge credit; is that correct?  
 9 **A. It sounds to me like it would be a deliberate**  
 10 **attempt to get around the regulation, and I**  
 11 **don't see the City attempting that.**  
 12 Q. And not only would it be a waste of money, it  
 13 would be a deliberate attempt to get around a  
 14 regulation, you don't foresee the City would do  
 15 that, but if they did that, it would be a  
 16 passive recharge credit; is that right?  
 17 **A. If you're taking from the one source, by**  
 18 **definition, I would say, yes, you took it from**  
 19 **Cheney and put it in the -- tried to do that,**  
 20 **that would not work.**  
 21 Q. And if you took water from, let's say, overflows  
 22 from the Big Ark River and the City said, let's  
 23 receive credits for taking overflows from the  
 24 Big Ark River instead of from the aquifer itself  
 25 and wanted a credit for that, would that be

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1 considered a passive recharge credit?  
 2 **A. I don't believe so.**  
 3 Q. Okay. And what is the basis for that opinion?  
 4 **A. It's above base flow water being taken out and**  
 5 **treated, it could potentially be injected into**  
 6 **the aquifer as a physical recharge credit, or it**  
 7 **could be diverted to town as a aquifer**  
 8 **maintenance credit, and at that point it would**  
 9 **be -- it would just be coming from above base**  
 10 **flow in a -- in the Ark as opposed to above base**  
 11 **flow in the Little Ark.**  
 12 Q. So I'm trying to understand the distinction  
 13 between, let's say, Cheney Reservoir or  
 14 El Dorado Reservoir and the Little Ark River on  
 15 the other -- on the other hand. And I think one  
 16 of the distinctions that's been made is that  
 17 when the Little Ark River floods, there's at  
 18 least a potential that that water could be  
 19 injected into the aquifer, is that at least one  
 20 distinction that's been made?  
 21 **A. I would say that is a distinction that's been**  
 22 **made, yes.**  
 23 Q. So let's say that the City built the  
 24 infrastructure to pipe water from Cheney  
 25 Reservoir when it flooded and inject that water

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1 into the aquifer. Let's say that infrastructure  
 2 was put into place and the City was able, then,  
 3 to inject water from Cheney Reservoir when it  
 4 was flooding into the aquifer. If that  
 5 occurred, then would the City be allowed to  
 6 obtain recharge credits for the possibility that  
 7 they could inject water into the aquifer from  
 8 Cheney Reservoir?  
 9 **A. I don't understand your question, the lake**  
 10 **doesn't flood, the lake fills up. So the lake**  
 11 **is a reservoir holding a certain amount of**  
 12 **water. So you're not taking -- there is no**  
 13 **above base flow in a lake.**  
 14 Q. Well, for example, if they open up, you know,  
 15 the dam, if you will, in Cheney Reservoir and  
 16 they're letting out water, could you pull water  
 17 out of the Ninnescah River as it floods and it's  
 18 coming out of the reservoir, could you pull that  
 19 water out and inject it into the aquifer?  
 20 **A. That would be a transient water resource, and if**  
 21 **it was properly treated, I think it could be**  
 22 **injected, but ...**  
 23 Q. So if we follow your line of testimony, if that  
 24 infrastructure was put into place where when the  
 25 Ninnescah River floods, you could inject that

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1 water into the aquifer, my question is, then, if  
 2 just merely putting that infrastructure in  
 3 place, does that eliminate the concept of a  
 4 passive recharge credit with respect to Cheney  
 5 Reservoir, or is there a different distinction  
 6 between Cheney Reservoir and the Little Arkansas  
 7 River?  
 8 **A. The concept is to take water that is transient**  
 9 **and would not stay in the system. Cheney stays**  
 10 **in the system because it's -- the water is**  
 11 **behind a dam. If Cheney was so full that**  
 12 **they're having to release from Cheney, you have**  
 13 **a serious flood event going on. It's about --**  
 14 **it's about having different storage tanks and**  
 15 **you're capturing an additional source of water**  
 16 **that's transient and doesn't come into the**  
 17 **basin. It's not -- I guess I ...**  
 18 Q. I guess perhaps -- perhaps you'll have to  
 19 educate me on the definition of transient. At  
 20 least in my simple mind, the way I understand  
 21 this is as Cheney -- when Cheney Reservoir  
 22 flows -- or fills up, water is flowing into  
 23 Cheney Reservoir from the Ninnescah River, and  
 24 so in that sense we're talking about transient  
 25 water that's flowing into Cheney Reservoir?

1 **A. No, it flows in and is held there for use.**  
 2 Q. Okay. So you're saying that no water flows out  
 3 of Cheney Reservoir?  
 4 **A. No, I'm not saying that.**  
 5 Q. Okay. So how -- I guess I'm just having a hard  
 6 time understanding that when we're talking about  
 7 water flowing into Cheney Reservoir that  
 8 eventually also flows out how that's not  
 9 transient water but the Little Arkansas River is  
 10 transient water, I'm still having trouble  
 11 understanding the difference?  
 12 **A. Well, all rivers flow by definition and they**  
 13 **have a base flow number. And what we're talking**  
 14 **about are flood events that are substantially**  
 15 **more than that, and that water would migrate**  
 16 **through without infiltrating into the aquifer or**  
 17 **being used for any beneficial use; it's just**  
 18 **zipping downstream. So that would be a**  
 19 **transient event.**  
 20 Q. What about Cheney being used above  
 21 the conserv -- above the conservation pool?  
 22 When the flood pool is released in Cheney  
 23 Reservoir, wouldn't that be transient water?  
 24 Under your definition?  
 25 **A. I guess that would be a man-made flood. I**

1 **don't ...**  
 2 Q. You know what, I'll move on to another line of  
 3 questioning.  
 4 **MR. STUCKY:** Madam Hearing Officer,  
 5 I do note that it's just a little after  
 6 5:00, would you like me to continue or to  
 7 resume tomorrow morning?  
 8 **PRESIDING OFFICER:** Well, I'm sort  
 9 of assuming that we won't be finished with  
 10 Mr. McCormick in the next 15, 20 minutes?  
 11 **MR. STUCKY:** No.  
 12 **PRESIDING OFFICER:** Okay. Then it  
 13 would probably be good to stop now and  
 14 resume tomorrow morning at 9:00. Thank  
 15 you.  
 16 (Whereupon, the proceedings were  
 17 adjourned at 5:03 p.m.)  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25

1  
 2 C E R T I F I C A T E  
 3 STATE OF KANSAS )  
 4 ) ss:  
 5 SEDGWICK COUNTY )  
 6 I, Nancy L. Rambo, a Certified Shorthand  
 7 Reporter, within and for the State of Kansas, do  
 8 hereby certify that the foregoing is a true and  
 9 correct transcript of the proceedings had at the  
 10 time and place hereinbefore set forth.  
 11 I further certify that I am not a relative  
 12 or employee or attorney or counsel of any of the  
 13 parties, nor am I a relative or employee of such  
 14 attorney or counsel, nor am I financially  
 15 interested in the action.  
 16 WITNESS my hand and official seal at  
 17 Wichita, Sedgwick County, Kansas, this 22nd day of  
 18 February, 2020.  
 19  
 20 NANCY L. RAMBO, R.P.R., C.S.R.  
 21 Registered Professional Reporter  
 22 Certified Shorthand Reporter  
 23  
 24 Costs:  
 25

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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage v*

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*Formal Hearing - Volume V*  
*February 11, 2020*

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1 STATE OF KANSAS  
 2 BEFORE THE DIVISION OF WATER RESOURCES  
 3 KANSAS DEPARTMENT OF AGRICULTURE  
 4  
 5 In the Matter of the City )  
 6 of Wichita's Phase II ) Case No.  
 7 Aquifer Storage and ) 18 WATER 14014  
 8 Recovery Project in Harvey )  
 9 and Sedgwick Counties, )  
 10 Kansas, )  
 11 Pursuant to K.S.A. 82a-1901  
 12 and K.A.R. 5-14-3a  
 13  
 14 FORMAL HEARING  
 15 VOLUME V  
 16  
 17 This matter came on for Formal Hearing  
 18 before Constance C. Owen, Presiding Officer, at  
 19 the First Mennonite Church, 427 West Fourth,  
 20 Halstead, Harvey County, Kansas, commencing at  
 21 9:02 a.m., on the 11th day of February, 2020.  
 22  
 23  
 24  
 25

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1 A P P E A R A N C E S  
 2  
 3 City of Wichita, Department of Public  
 4 Works and Utilities, appears by their attorney,  
 5 Brian K. McLeod, Deputy City Attorney, 435 North  
 6 Main, 13th Floor, Wichita, Kansas 67202.  
 7  
 8 Equus Beds Groundwater Management District  
 9 No. 2 appears by their attorneys, Thomas A. Adrian  
 10 and David J. Stucky, Adrian & Pankratz, 301 North  
 11 Main, Suite 400, Newton, Kansas 67114. Also  
 12 present was Tim Boese.  
 13  
 14 Division of Water Resources appears by  
 15 their attorneys, Aaron B. Oleen and Stephanie  
 16 Murray, Kansas Department of Agriculture, 1320  
 17 Research Park Drive, Manhattan Kansas 66502.  
 18  
 19 Intervenors appear by their attorney,  
 20 Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
 21 Kansas 67056.  
 22  
 23  
 24  
 25

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 6 REDIRECT EXAMINATION BY MR. MCLEOD 1221  
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10

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12 OFFERED 1301

13 ADMITTED 1301

14

15 Number 21

16 OFFERED 1395

17 ADMITTED N/A

18

19 Number 22

20 OFFERED 1395

21 ADMITTED N/A

22

23 Number 23

24 OFFERED 1395

25 ADMITTED N/A

1 **PRESIDING OFFICER:** Okay. We are  
 2 now back on the record. It is Tuesday,  
 3 February 11, 2020, it's 9:00 a.m. in the  
 4 morning, and we're continuing with the  
 5 hearing for the City of Wichita's request  
 6 to modify their ASR Phase II project. And  
 7 we will pick up from where we were  
 8 yesterday, and I believe, Mr. Stucky, you  
 9 were on cross with Mr. McCormick.  
 10 **MR. STUCKY:** All right. Thank you.  
 11

12 **CROSS-EXAMINATION (Cont.)**  
 13 **BY MR. STUCKY:**  
 14 Q. Yesterday, I think when we concluded, we were  
 15 having a conversation about transient water as  
 16 it relates to El Dorado Reservoir and as it  
 17 relates to Little Arkansas River, and I think I  
 18 heard part of your testimony to say that one of  
 19 the things that we would not do is take water  
 20 directly from El Dorado to the treatment plant  
 21 by Bentley and then treat it again in Wichita.  
 22 Was that one of the things you said?  
 23 **A. I did say that.**  
 24 Q. But just so I'm clear, right now, when there's  
 25 overflow water from the Little Arkansas River,

1 INDEX OF GMD2 EXHIBITS (Cont.)

2

3 Number 24

4 OFFERED 1395

5 ADMITTED N/A

6

7 Number 28

8 OFFERED 1302

9 ADMITTED N/A

10

11 Number 53

12 OFFERED 1309

13 ADMITTED 1309

14

15 Number 57

16 OFFERED 1307

17 ADMITTED 1307

18

19

20

21

22 Certificate of Reporter 1408

23

24

25

1 wouldn't it be a true statement that that  
 2 overflow water is taken to Bentley for treatment  
 3 and then also taken to the plant in Wichita for  
 4 further treatment?  
 5 **A. Yes.**  
 6 Q. Now, let's move on to a conversation about the  
 7 recharge capacity that the City has. Yesterday  
 8 you heard some testimony from Mr. Clement about  
 9 the current infrastructure the City has in place  
 10 and their recharge -- and the accompanying  
 11 recharge capacity the City has. Do you recall  
 12 that discussion?  
 13 **A. Uh-huh. Yes.**  
 14 Q. Now, there was a chart that was discussed and  
 15 some testimony by Mr. Clement, and I believe  
 16 that he said when the City was trying to  
 17 consider what was available, what their recharge  
 18 capacity was, they were excluding basin  
 19 number 36 from the calculations. Do you recall  
 20 that discussion?  
 21 **A. I do.**  
 22 Q. Okay. And I think he also mentioned that they  
 23 were excluding recharge basin 2 from the  
 24 calculations. Do you recall that discussion?  
 25 **A. I do.**

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1 Q. As you're sitting here today, can you explain to  
 2 me, first of all, why basin 36 is being  
 3 excluded?  
 4 **A. Basin 36 is in the southeast corner of the basin**  
 5 **storage area, and it is more intended for**  
 6 **operations purposes, for cycling the plant on**  
 7 **and off, because it's not ideally located for**  
 8 **recharge activities due to the fact that most of**  
 9 **the water that you put in it immediately leaves**  
 10 **the basin storage area or flows into the Little**  
 11 **Ark. And there is not a lot of infrastructure**  
 12 **to recover the water that is put into basin 36.**  
 13 Q. Same question for basin 2?  
 14 **A. Basin 2 is in the northwest corner along the**  
 15 **Phase I -- it's part of the Phase I**  
 16 **infrastructure, and the reason it's excluded**  
 17 **from the calculations is there's -- you can't**  
 18 **recover water from a basin, it's simply an**  
 19 **injection point.**  
 20 Q. Now, though, if it's an injection point, isn't  
 21 there a possibility that the basin could allow  
 22 for recharge, though, of the aquifer?  
 23 **A. The basin does recharge the aquifer.**  
 24 Q. And so in -- in the event that basin 2 is useful  
 25 for that purpose, why would it be excluded from

Page 1143

1 the calculations?  
 2 **A. Because you can't recover water from a basin and**  
 3 **we're looking at water pumping facilities, water**  
 4 **pumping infrastructure.**  
 5 Q. Yesterday there was a discussion about appendix  
 6 I, it's in the black notebook. There was a  
 7 chart in appendix I.  
 8 **MR. STUCKY:** May I approach the  
 9 witness?  
 10 **PRESIDING OFFICER:** Yes.  
 11 **A. The hydrographs?**  
 12 **BY MR. STUCKY:**  
 13 Q. Yeah. A blue chart.  
 14 **A. That one, you bet.**  
 15 Q. And I asked a series of questions yesterday  
 16 about a chart that you now have in front of you  
 17 on appendix I.  
 18 **A. Uh-huh.**  
 19 Q. Just for the record, what is that chart called?  
 20 **A. Modeled aquifer conditions as a percentage of**  
 21 **predevelopment aquifer thickness by ASR index**  
 22 **well extracted from upper model layer (1) -**  
 23 **equivalent to index well A aquifer interval.**  
 24 Q. And would you agree with me that that's a blue  
 25 chart, just for the record?

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1 **A. Sure, yes.**  
 2 Q. If you could refer to IW12 in that chart.  
 3 **A. Okay.**  
 4 Q. And would you note that the numbers for IW12 are  
 5 100 percent across the entire chart?  
 6 **A. Yes.**  
 7 Q. Can you explain to me why during that eight  
 8 years of simulation it would remain at  
 9 100 percent at all times?  
 10 **A. Index well -- or index cell 12, if you flip back**  
 11 **one page to the map of the basin storage area**  
 12 **just for reference, we're sitting in index cell**  
 13 **12, it's the City of Halstead, and I don't**  
 14 **believe there's any significant pumping**  
 15 **infrastructure in this cell so there's nothing**  
 16 **to lower the water levels. Or I'm not aware of**  
 17 **any significant --**  
 18 Q. So you're saying that --  
 19 **A. -- pumping infrastructure in the cell.**  
 20 Q. So during the drought simulation, in year one,  
 21 it was perceived that the aquifer would be  
 22 completely full in this cell, is that what this  
 23 is saying, in year one of the simulation?  
 24 **A. No, it would have been -- it would have started**  
 25 **at the '98 levels, so if -- well, if the '98**

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1 **water levels were 100 percent saturated**  
 2 **thickness in this index cell, then, yes, it**  
 3 **would be 100 percent full at the start. It**  
 4 **would depend on what those actual water levels**  
 5 **were.**  
 6 Q. Okay. So I'm just looking at this chart, and  
 7 second from the left, it says initial aquifer  
 8 condition, percent full, and you have it listed  
 9 there as 100 percent full.  
 10 **A. Okay, yeah.**  
 11 Q. And so you're saying during the eight years of  
 12 simulation that this particular index cell  
 13 wouldn't go down at all in that eight years of  
 14 simulation, is that what this graph is showing?  
 15 **A. It's showing that the average water level in**  
 16 **this cell would not change at all.**  
 17 Q. Okay. Now, I have a question also, you know,  
 18 some of the other index cells like index cell 11  
 19 and index cell 7, do those have significant  
 20 degrees of pumping in those index cells?  
 21 **A. I'm just going off memory for those --**  
 22 Q. I'd ask that you go ahead and flip back roughly  
 23 one, two, three pages in that same attachment,  
 24 there's a map?  
 25 **A. Right.**

1 Q. And I believe that it shows -- the triangles  
2 show wells?

3 **A. Yeah, those are the City wells.**

4 Q. Okay.

5 **A. And there is no City infrastructure in those  
6 cells. I'm not familiar with it -- enough with  
7 it to know what industrial or agricultural wells  
8 exist in those wells.**

9 Q. So my question was for index cell 7 and index  
10 cell 11, we'll note that in the model simulation  
11 from the initial condition to the final  
12 condition, the percentage declines in those --  
13 in 7 and 11, would you agree with me, at least  
14 with respect to those two? For 7, for example,  
15 it goes --

16 **A. Yes, there is a -- a decline in both 7 and 11.**

17 Q. So I guess what I'm trying to understand is what  
18 is the difference between 7 and 11 on one hand,  
19 which actually see declines, and we don't see  
20 significant infrastructure shown in that map, or  
21 any infrastructure shown in that map, versus  
22 index well 12 where there's no decline at all,  
23 can you explain the difference?

24 **A. As I said, there's no City infrastructure  
25 associated with the City's Equus Beds well field**

1 was no depletion at all, is that what your  
2 simulation shows?

3 **A. That's what the model shows, yes.**

4 Q. Did you -- in the past, have you had the  
5 occasion to submit the official accounting  
6 reports to the Division of Water Resources?

7 **A. Yes.**

8 Q. And when did you first start submitting the  
9 annual accounting reports to the Division of  
10 Water Resources?

11 **A. 2007.**

12 Q. And, in fact, do you also submit those  
13 accounting reports to the Equus Beds Groundwater  
14 Management District?

15 **A. As we discussed yesterday, I submit three copies  
16 to the DWR and one copy directly to Mr. Boese  
17 simultaneously.**

18 Q. And in the past, have you and Mr. Boese had  
19 discussions about the nature of those accounting  
20 reports?

21 **A. Yes.**

22 Q. And, in fact, has Mr. Boese, let me just say it  
23 this way, caught irregularities in those reports  
24 in the past?

25 **A. Mr. Boese has brought them to my attention. I**

1 **in those cells, that's all that's shown on that  
2 map. We don't know if there's industry  
3 pumping -- the figure that we're looking at does  
4 not show that there is any industry wells or  
5 irrigation wells in those cells, and off the top  
6 of my head, I can't tell you what cells are in  
7 there -- or what wells are in those cells or how  
8 much they are pumping. I would suspect that  
9 since they show declines there is our irrigation  
10 or industrial wells that pump a significant  
11 amount of water in those cells.**

12 Q. Well, let me ask you this: In the town of  
13 Halstead, are there no domestic wells that  
14 homeowners have in the town of Halstead, do they  
15 not have any domestic wells that would deplete  
16 down the aquifer?

17 **A. I suspect, I don't know that there are domestic  
18 wells in the town of Halstead. Domestic wells  
19 are pumping at 10 gallons a minute, and I would  
20 not expect a domestic well to significantly  
21 deplete the aquifer, to even show up in the --**

22 Q. Okay. So --

23 **A. -- in the modeling that was done.**

24 Q. And based on your simulation for this area, for  
25 the City of Halstead, you're saying that there

1 **believe he typically had his staff  
2 hydrogeologist review the reports, and, yes,  
3 they have found irregularities or errors,  
4 whatever you'd like to call them.**

5 Q. So, for example, in a 2012 annual accounting  
6 report, do you recall Mr. Boese calling you up  
7 and indicating that the report was submitted  
8 with no recharge activity shown in the  
9 accounting report? Do you recall that  
10 conversation?

11 **A. No.**

12 Q. In other words, the accounting report, it was  
13 either a call or email, and the accounting  
14 report indicated that there was -- there was no  
15 recharge activity shown on the accounting  
16 report, and Mr. Boese contacted you and  
17 indicated there should have been for 2012, and  
18 then the report was corrected. Do you recall  
19 that conversation?

20 **A. I do not recall that specific conversation.**

21 Q. With respect to the accounting report for 2015,  
22 do you recall receiving a letter from Mr. Boese  
23 with the Equus Beds Groundwater Management  
24 District where he indicated that there were a  
25 number of concerns with the accounting report

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1 that he'd identified?

2 **A. Mr. Boese has submitted a letter to DWR and**

3 **copies me on it each year, and in various years,**

4 **he has pointed out things that he would like to**

5 **see included or concerns that he had with it. I**

6 **don't recall the specific 2015 letter.**

7 Q. So your recollection was that he'd sent a letter

8 to DWR, that you had been copied on this

9 particular letter, and then some of those

10 concerns were addressed, is that your

11 recollection?

12 **A. Typically, that is what happens. I can't speak**

13 **directly to the 2015 letter, I don't recall it.**

14 **MR. STUCKY:** May I approach the

15 witness?

16 **PRESIDING OFFICER:** Yes.

17 **BY MR. STUCKY:**

18 Q. Do you recognize this letter?

19 **A. It looks like a letter to me from Tim, cosigned**

20 **by Steve Flaherty, with a list of concerns and**

21 **issues that he has with the letter.**

22 Q. So in other words, this particular letter -- and

23 these were concerns identified with the 2015

24 annual accounting report; is that correct?

25 **A. Yes, that's what the letter says.**

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1 Q. And who is this letter addressed to?

2 **A. This one is addressed to me, so Tim probably**

3 **sent it to me prior to sending his actual letter**

4 **to the DWR.**

5 Q. And in this particular letter, he outlines a

6 number of concerns --

7 **A. Uh-huh.**

8 Q. -- that he and his hydrologist identified with

9 an annual accounting report. Is that a true

10 statement?

11 **A. Looks like it, yes.**

12 Q. And could you tell me just in a nutshell for the

13 record, now that you're able to refresh your

14 memory, what some of those concerns were?

15 **A. Well, first one is water quality data for**

16 **shallow wells was not included. Ah, okay, this**

17 **is refreshing my memory. It indicates more**

18 **recharge credits were gained than the -- than**

19 **were actually recharged, which is an obvious**

20 **problem. And then it has questions about ASR**

21 **cells, specific cells, recharge credits along**

22 **the Little Ark River, concern about the labeled**

23 **amount of precipitation, number of calibration**

24 **measurements compared to the previous report.**

25 **Asked about the date of the last calibration,**

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1 **there was a significant figures question that**

2 **they had, two table values not matching,**

3 **correction on a map to the well numbers, the DWR**

4 **well numbers, and then comment that the figure 1**

5 **is -- has small printing and it's hard to read.**

6 Q. So in other words, Mr. Boese, along with his

7 hydrologist, identified a number of concerns, at

8 least, in that letter with the 2015 annual

9 accounting report. Is that a true statement?

10 **A. I would say so.**

11 Q. And how did you respond to that particular

12 letter?

13 **A. I, again, don't remember specifically.**

14 **MR. STUCKY:** May I approach the

15 witness?

16 **A. Great.**

17 **PRESIDING OFFICER:** Yes.

18 **BY MR. STUCKY:**

19 Q. Trade ya.

20 **A. That's what I was going to say is typically what**

21 **we do is we write a letter back, we list the**

22 **concern that Mr. Boese had and then we write a**

23 **paragraph or a few paragraphs responding to his**

24 **concerns and questions.**

25 Q. So in other words, when Mr. Boese sent his

Page 1153

1 concerns to you, you identified those concerns

2 and you addressed those concerns in a letter

3 that you sent back to Mr. Boese. Is that a true

4 characterization?

5 **A. I think so.**

6 Q. And would you also agree that this letter that

7 was sent by Mr. Boese, the April 4, 2017 letter

8 that was sent by Mr. Boese, that was sent to you

9 after the 2015 annual accounting report was

10 submitted; is that right?

11 **A. Yes. I think.**

12 Q. And so would you also agree to me -- agree with

13 me that after this April 4, 2017 letter was sent

14 by Mr. Boese and after you addressed it through

15 a response, would you agree with me that a new

16 accounting report was then submitted that

17 addressed the concerns in Mr. Boese's letters?

18 And you can look at that letter to refresh your

19 memory in that regard.

20 **MR. STUCKY:** May I approach the

21 witness?

22 **PRESIDING OFFICER:** Yes.

23 **A. Does it state somewhere in the letter that --**

24 **BY MR. STUCKY:**

25 Q. Yeah.

1 **A. Okay, great, that's what I was looking for.**  
2 Q. Okay. On the very first page of your response  
3 letter -- and what was the date of your response  
4 letter by the way?  
5 **A. April 13th, 2017.**  
6 Q. On the very last line of that first page, could  
7 you read that sentence?  
8 **A. A revised table 4.2 will be included when the**  
9 **report is reissued.**  
10 Q. Okay. So in other words, does that refresh your  
11 memory on whether or not you submitted a new  
12 report?  
13 **A. I would assume that, based on that statement,**  
14 **that I did.**  
15 Q. And so if I were to tell you that you submitted  
16 a 2015 accounting report and then you addressed  
17 the errors that were identified by the District  
18 and resubmitted a new accounting report, would  
19 that sound like an accurate statement?  
20 **A. That sounds like the actions that I would take,**  
21 **but I honestly don't recall the exact**  
22 **circumstances of having done it.**  
23 Q. So without engaging in this exercise for each  
24 accounting report, would you at least agree with  
25 me that in the past there's been a collegial

1 **storage that had been depleted and seemed like a**  
2 **good target.**  
3 Q. I want to focus in on that last part. You said  
4 that the 120,000 acre-foot cap happened to  
5 coincide with the available storage in the  
6 aquifer, so this was just merely coincidental  
7 that the 120,000 coincided with the available  
8 capacity in the aquifer after depletion?  
9 **A. I think that was what we used as a check that**  
10 **made it seem like a good target.**  
11 Q. So, in fact, was the 120,000 acre-foot cap based  
12 on the fact that that number represented the  
13 available storage in the aquifer after  
14 depletion?  
15 **A. I don't believe it was based on that, no.**  
16 Q. I'd like to move to the discussion about Bentley  
17 and the W&S well field that we had yesterday  
18 with Mr. Clement.  
19 **A. Okay.**  
20 Q. Would you agree --  
21 **A. It's the E&S well field, not the W&S well field.**  
22 Q. Ah, thanks for correcting the record. With  
23 respect to the Bentley reserve well field, would  
24 you agree that there's two wells, at least, in  
25 the Bentley reserve well field that have no

1 and helpful dialogue between the District and  
2 Burns & Mac regarding these accounting reports?  
3 **A. I would agree there's been a dialogue regarding**  
4 **them; it has not always been collegial.**  
5 Q. Would you agree that the District has in the  
6 past identified concerns, at least, with the  
7 accounting reports that have been submitted by  
8 Burns & Mac and has, in fact, corrected or  
9 identified errors in those reports?  
10 **A. I would certainly agree with that.**  
11 Q. Yesterday there was a discussion regarding the  
12 120,000 acre-foot cap in the City's proposal?  
13 **A. Yes.**  
14 Q. And I just want to make sure that I understood  
15 this point and it wasn't missed, how was that  
16 120,000 acre-foot number derived?  
17 **A. My recollection is that we deter -- or that it**  
18 **was determined, Burns & Mac didn't do the**  
19 **numbers, but it was determined that 60,000 or**  
20 **slightly more acre-feet would be the 1 percent**  
21 **drought -- amount of ASR credits that the City**  
22 **would like to hold for -- would use in a 1**  
23 **percent drought, and then a contingency was**  
24 **added onto that, bumping it up to 120, which**  
25 **also happened to coincide with the volume of**

1 restrictions on minimum flow requirements, would  
2 you agree with that statement?  
3 **A. The two wells in the south central -- there's**  
4 **six wells, three lines side by side, the two**  
5 **wells farthest from the river in the southwest**  
6 **corner have a native water right. They do have**  
7 **water quality concerns, though.**  
8 Q. Now, tell me why those two don't have any kind  
9 of minimum flow requirement before one can pump  
10 out of those wells and the other four do, can  
11 you explain the difference?  
12 **A. Those two have a native Equus Beds water right**  
13 **or are associated with a native water right.**  
14 **The other four are considered bank storage wells**  
15 **that are recharged by the flow in the Arkansas**  
16 **River.**  
17 Q. And do you know what the cap is for the two  
18 wells that don't have a minimum flow requirement  
19 of the river?  
20 **A. Not off the top of my head, I do not, no.**  
21 Q. If I were to tell you it was 837 acre-foot a  
22 year combined, would you disagree with that  
23 number?  
24 **A. I have no reference to agree or disagree with**  
25 **that number without seeing the actual water**

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1 **right.**  
 2 Q. So in other words, with respect to those two  
 3 wells, at least, and I know that there was a  
 4 quality concern mentioned, but at least with  
 5 respect to those two wells, regardless of what  
 6 the flow of the river is, those two wells could  
 7 be available for appropriation by the City at  
 8 all times. Is that a true statement?  
 9 **A. I would need to see the water right. I believe**  
 10 **there is -- there is something about blending of**  
 11 **that water due to the water quality, but I can't**  
 12 **recall off the top of my head.**  
 13 Q. So at least as you're sitting here right now,  
 14 your answer is you're unsure in that regard; is  
 15 that correct?  
 16 **A. I would have to read the water right to make an**  
 17 **accurate statement about that.**  
 18 Q. Yesterday there was a discussion about  
 19 contingencies --  
 20 **A. Uh-huh.**  
 21 Q. -- as it relates to the City's proposal, and we  
 22 talked about the fact that there was a 10-foot  
 23 contingency in the City's proposal. And I had  
 24 asked for the scientific basis behind the  
 25 10-foot contingency, and I guess as I'm still

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1 standing here today, I'm unclear what that  
 2 answer was as far as what that scientific basis  
 3 was. Can you explain to me the rationale for  
 4 the 10-foot contingency?  
 5 **A. A contingency is to cover things that are**  
 6 **unknown or unforeseen that occur, changes in**  
 7 **pumping, changes in where we start, whatever.**  
 8 **As I recall, the way that came about, we**  
 9 **originally put a 5-foot contingency on that, and**  
 10 **when we met with the GMD and Mr. Boese in one of**  
 11 **those meetings to have a, how did you term it,**  
 12 **collegiate discussion about this, Mr. Boese**  
 13 **questioned whether 5 was enough and asked if we**  
 14 **wanted to do 10, and we said we could do 5 or**  
 15 **10. And 10 was selected based on the number of**  
 16 **unknowns and unforeseen circumstances.**  
 17 Q. So in other words, if your testimony is here  
 18 today that Burns & Mac agreed with a 5-foot  
 19 contingency and that's what they wanted to put  
 20 in their proposal -- I just want to make sure I  
 21 understand your testimony, let's strike that  
 22 question and I'll back up. Just to make sure I  
 23 understand, originally Burns & Mac believed that  
 24 a 5-foot contingency was adequate, but then  
 25 Mr. Boese from the District suggested that there

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1 should be a 10-foot contingency. Does that sum  
 2 up your testimony accurately?  
 3 **A. I think Mr. Boese had additional concerns that**  
 4 **he pointed out and additional things that he**  
 5 **worried about being unforeseen, possibly adding**  
 6 **wells, other users maybe; I don't recall the**  
 7 **exact discussions, but he suggested that a**  
 8 **larger contingency might be a good idea, and we**  
 9 **accepted his suggestion.**  
 10 Q. So in other words, once again, Mr. Boese with  
 11 the Equus Beds Groundwater Management District  
 12 identified some items or some concerns that  
 13 Burns & Mac had not thought of as they developed  
 14 this proposal. Is that a true statement?  
 15 **A. I believe he brought up some things that he was**  
 16 **concerned about that we didn't feel we had**  
 17 **adequately addressed previously.**  
 18 Q. And so based on these new concerns or new  
 19 perceived issues with the modeling that was  
 20 performed by Burns & Mac, it was determined that  
 21 this new contingency would be added; is that  
 22 correct?  
 23 **A. I don't believe it was perceived issues with the**  
 24 **modeling. I believe it was perceived issues**  
 25 **that he was aware of that we were not.**

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1 Q. Do you recall what those issues were?  
 2 **A. As I said, possibly adding wells, something like**  
 3 **that, I'm -- it's a long time ago, and I'm just**  
 4 **going off foggy memory on that one.**  
 5 Q. Well, let me ask you this: If Mr. Boese was the  
 6 one who, in your mind, suggested the 10 percent  
 7 contingency and Burns & Mac originally  
 8 recommended a 5 percent contingency, if a 10  
 9 percent contingency is no longer Mr. Boese's  
 10 recommendation, would Burns & Mac support a 5  
 11 percent contingency at this juncture?  
 12 **A. I believe it's 5 foot or 10 foot --**  
 13 Q. My mistake.  
 14 **A. -- instead of percent, just to make sure the**  
 15 **record's correct. I believe based on the**  
 16 **concerns that were expressed, it was determined**  
 17 **that a 10 foot was appropriate, and that is what**  
 18 **we put in the proposal.**  
 19 Q. So even if Mr. Boese doesn't recall that  
 20 discussion or he's recommending a 5-foot  
 21 contingency at this point, it's still Burns &  
 22 Mac's position that we should have a 10-foot  
 23 contingency. Is that a true statement?  
 24 **A. We have that -- that is what is in the current**  
 25 **proposal.**

1 Q. And my question, then, is I guess I want to know  
2 what the good reasons were for changing from a  
3 5-foot contingency to a 10-foot contingency, if  
4 you could outline what those particular concerns  
5 were, other than a vague memory of what  
6 occurred?

7 **A. I don't have any documentation to refresh my  
8 memory in front of me, those were the concerns  
9 that were brought up, and based on the  
10 discussions that we had in the meeting with  
11 Mr. Boese, it was -- a 10 foot was selected.**

12 **That's what's in the proposal, I would want to  
13 go back and look at those concerns in detail  
14 before I would be willing to say I was ready to  
15 change my contingency. If we made that  
16 statement and put that contingency in the  
17 proposal, there were good reasons behind it.**

18 Q. You have the proposal in front of you, is there  
19 anything in the proposal itself that would  
20 refresh your memory in that regard?

21 **A. Short of reading through the whole proposal  
22 right now, nothing springs to mind.**

23 Q. So as you're sitting here today, your testimony  
24 is I support a 10-foot contingency because we  
25 put a 10-foot contingency in the proposal, and

1 recommendation one way or another; is that  
2 correct?

3 **A. Could you restate that, please.**

4 Q. Well, let me ask you this: I think you said  
5 that you don't have information in front of you,  
6 the data in front of you to determine whether or  
7 not that contingency was reasonable, and as  
8 you're sitting here on the stand today, you  
9 don't have an opinion in that regard because it  
10 sounds like others may have done that research.  
11 Is that a true statement?

12 **A. No, I wouldn't say that others did that  
13 research. I'm saying that right here off the  
14 top of my head, I'm not willing to change that  
15 contingency without looking at the data and  
16 doing an evaluation and determining what -- we  
17 made -- we recommended that contingency with  
18 good reasons, and without reviewing the data and  
19 reviewing Mr. Boese's concerns, if you'd like to  
20 look at it specifically index cell by index  
21 cell, having that discussion, I'm not willing to  
22 make that -- any opinion or -- on what change  
23 would be.**

24 Q. You signed off ultimately on the proposal, is  
25 that a true statement?

1 there's reasons probably for why we put that in  
2 the proposal. Is that your testimony?

3 **A. My testimony is that, yes, that we identified  
4 risks and incorporated the concerns of the  
5 concerned parties and developed a 10-foot  
6 contingency which we put in the proposal.**

7 Q. Yesterday there was a discussion regarding at  
8 least some of the index cells and a discussion  
9 regarding how the drop in the index cell would  
10 be less than -- than 10 feet or less than the  
11 contingency that was added in the proposal. Do  
12 you recall that discussion?

13 **A. I do recall that discussion.**

14 Q. So at least with respect to the index cells  
15 where the drop was significantly less than the  
16 identified contingency in the proposal, do you  
17 believe that contingency should be revised for  
18 those index cells?

19 **A. As I said, those contingencies were determined  
20 in the process of developing the proposal, I do  
21 not -- I'm not -- I have no information here  
22 that indicates I would be willing to recommend a  
23 reduced contingency anywhere.**

24 Q. In other words, you don't have any information  
25 in front of you that allows you to make a

1 **A. I did.**

2 Q. Okay. You have the proposal in front of you,  
3 it's in the black notebook.

4 **A. Yes.**

5 **MR. STUCKY:** Madam Hearing Officer,  
6 I would ask to allow the witness to have a  
7 few minutes to refresh his memory in this  
8 regard on the contingency so he can answer  
9 my questions.

10 **PRESIDING OFFICER:** That's fine.

11 **A. Madam, I don't have the ability to do this  
12 analysis sitting here at the table. This is a  
13 time-consuming analysis, there's nothing in the  
14 proposal that's going to allow me to change my  
15 opinion sitting here today.**

16 **PRESIDING OFFICER:** So that's  
17 different. If this cannot refresh his  
18 memory, then there isn't reason for him to  
19 review it.

20 **A. We would love to sit down, take a look at the  
21 data again, it's been several years since we put  
22 this proposal together, we'd want to sit down  
23 with Mr. Boese and discuss his concerns on  
24 particular index cells, it would be a several  
25 week process. To make any change.**



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1 **PRESIDING OFFICER:** And so you're  
 2 asking him to review it as though it can  
 3 refresh his memory, and you're talking  
 4 about a new analysis, so you're talking  
 5 about two different things.  
 6 **A. Yeah.**  
 7 **BY MR. STUCKY:**  
 8 Q. So as you're sitting here today and we're  
 9 testifying in the hearing, in the live hearing,  
 10 there's nothing that you can look at that can  
 11 help to refresh your memory and explain to you  
 12 why this contingency was a defensible number?  
 13 **A. I believe I've already testified that it was a**  
 14 **defensible number due to the risks that were**  
 15 **identified and concerns of the concerned parties**  
 16 **and we arrived and settled on a 10-foot**  
 17 **contingency. If we want to change that**  
 18 **contingency, we would need to sit down with all**  
 19 **of those concerned parties again and look at the**  
 20 **data a second time and review those risks and**  
 21 **reevaluate, but I don't --**  
 22 Q. I'll rephrase my question: As you're sitting  
 23 here today, you don't recall the specifics of  
 24 the rationale and what those concerns were  
 25 that -- the genesis of changing from a 5-foot

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1 contingency to a 10-foot contingency; is that  
 2 true? And if you don't recall, that's fair.  
 3 **A. I -- no, I do not recall the specific concerns.**  
 4 Q. And if I'm to ask you how that 10-foot  
 5 contingency was calculated or determined, as  
 6 you're sitting here today, you don't recall  
 7 exactly how it was done, you would have to look  
 8 at some numbers and do some new calculations; is  
 9 that right?  
 10 **A. I -- I recall it was an extensive process that**  
 11 **took weeks at the time, and I obviously can't do**  
 12 **that sitting here.**  
 13 Q. Well, can you explain what that process was to  
 14 arrive at that 10-foot contingency calculation?  
 15 **A. I believe I did that about five minutes ago.**  
 16 Q. And maybe I was unclear, can you explain how it  
 17 was calculated?  
 18 **A. We calculated the water levels, we -- with the**  
 19 **model, through the model runs, we evaluated the**  
 20 **water level fluctuations, we looked at**  
 21 **variability in the aquifer, we looked at**  
 22 **variability of pumping. We developed numbers**  
 23 **through that process, we sat down with GMD, and**  
 24 **I believe DWR was at the conversation as well,**  
 25 **and reviewed the process that we had used and**

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1 **the things that we had evaluated.**  
 2 **I believe -- I'm aware that Mr. Boese**  
 3 **brought up some concerns that he had; I -- I**  
 4 **honestly don't remember who else was at the**  
 5 **meeting and who else brought up concerns. At**  
 6 **that point, we arrived upon, due to these other**  
 7 **concerns, do you think we should make that a**  
 8 **larger contingency? We went back, considered**  
 9 **those concerns, and agreed with that statement**  
 10 **and went ahead and set the contingency.**  
 11 Q. A moment ago, you indicated that if Mr. Boese is  
 12 now recommending a 5-foot contingency, let's  
 13 say, for example, or a different contingency,  
 14 you said what one would have to do is Burns &  
 15 Mac would have to spend a couple weeks, have a  
 16 dialogue with the District, reevaluate that  
 17 contingency, and determine what a reasonable  
 18 number is. Was that your testimony in that  
 19 regard?  
 20 **A. Something along those lines.**  
 21 Q. So as you're sitting here today, if the GMD  
 22 testifies and gets on the stand and indicates  
 23 that a different contingency is appropriate, do  
 24 you think that would be a useful exercise to  
 25 engage in?

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1 **A. If -- if changes are required, we would**  
 2 **certainly want to engage in that discussion.**  
 3 Q. So are you suggesting that Mr. Boese recommended  
 4 that the City lower the minimum index levels?  
 5 **A. Mr. Boese suggested that we add the contingency.**  
 6 Q. Or on the other hand --  
 7 **A. Which would have the effect of lowering the**  
 8 **index levels.**  
 9 Q. Or on the other hand, was Mr. Boese and his  
 10 staff just helping with the model prior to the  
 11 City even considering submitting a proposal?  
 12 **A. No. These were discussions where the proposal**  
 13 **was being developed and we were meeting with**  
 14 **Mr. Boese to discuss the aspects of the proposal**  
 15 **with him ahead of time so it would not be -- he**  
 16 **would be aware of the contents of the proposal**  
 17 **prior to us submitting it.**  
 18 Q. I'm going to move on. Yesterday we had a  
 19 discussion about saturated thickness and what  
 20 saturated thickness means.  
 21 **A. Uh-huh.**  
 22 Q. Do you recall that discussion?  
 23 **A. Yes.**  
 24 Q. And Mr. Clement gave a definition of saturated  
 25 thickness, do you recall that definition?

1 **A. Yes.**

2 Q. In a general sense, do you agree with his  
3 definition of saturated thickness?

4 **A. Yes.**

5 Q. In other words, just to make this quite simple,  
6 he indicated that if bedrock was 100 feet down  
7 and the water -- and the water level was at zero  
8 essentially, there would be 100 feet of  
9 saturated thickness. Do you recall, in a basic  
10 sense, that discussion?

11 **A. Yes.**

12 Q. And do you also recall what Mr. Clement said  
13 yesterday that if in that same example for  
14 50 feet of that 100 feet there was clay layers,  
15 there would only be a practical saturated  
16 thickness of only 50 feet? Do you recall that  
17 discussion as well?

18 **A. That was Mr. Clement's testimony about the  
19 definition of practical saturated thickness.**

20 Q. Would you also agree that there's a difference  
21 between saturated thickness and practical  
22 saturated thickness?

23 **A. Yes.**

24 Q. And would you also agree that determining a  
25 practical saturated thickness is best determined

1 **A. In the drought modeling is what you're referring  
2 to?**

3 Q. That's correct.

4 **A. No, we did not.**

5 Q. I'd ask that you turn to figure 16 in the City's  
6 proposal. It's on page 4-6.

7 **A. Oh, yes.**

8 Q. Yesterday when you were testifying, you talked  
9 about that graph -- graphical depiction of the  
10 difference, I believe, between what ASR would  
11 look like and what AMC accounting would look  
12 like. Is that what that graph shows?

13 **A. Yes.**

14 Q. And at least in the initial years, I believe,  
15 that are shown on this map, what you testified  
16 to was that the lines graphically are very close  
17 to each other. Is that what you testified to?

18 **A. Yes.**

19 Q. I'd ask now that you focus in on the year 2015.

20 **A. Okay.**

21 Q. At least with respect to the year 2015, can you  
22 read in that blue chart what the actual  
23 cumulative physical recharge credits earned in  
24 acre-feet was for that year?

25 **A. Yes, the actual cumulative physical recharge**

1 by looking at individual well logs?

2 **A. You have to do that, yes.**

3 Q. And would you also agree that at least in this  
4 case as it relates to the City's proposal, you  
5 did not look at any individual well logs, you  
6 personally?

7 **A. No, I looked at individual well logs many times.  
8 The saturated thickness that this discussion was  
9 centered around is the saturated thickness, the  
10 average saturated thickness of an index cell,  
11 which is a four-mile-square area. So within  
12 that, you would expect changes in the saturated  
13 thickness and the practical saturated thickness  
14 in locations.**

15 Q. Well, here's my question: Did you look at  
16 individual well logs within the given index cell  
17 to determine if the data that was created by the  
18 modeling matched up to the actual well logs  
19 within those index cells?

20 **A. Could you ask that again, please.**

21 Q. My question is did you look at individual well  
22 logs within an index cell to determine whether  
23 or not that measured data of the individual well  
24 logs matched up with the modeled results that  
25 were given?

1 **credit earned for 2015 was 4,978.2 acre-feet.**

2 Q. Now, in the green portion of that chart, it  
3 depicts what would be the amount accumulated  
4 under the aquifer maintenance credit accounting  
5 method. Is that a true statement?

6 **A. That is true.**

7 Q. What is shown in 2015 for aquifer -- for the  
8 aquifer maintenance credit accounting method?

9 **A. 5,866.92 acre-feet.**

10 Q. And just so I understand, there's a difference  
11 of approximately, let's say, 900 acre-feet  
12 between those two numbers?

13 **A. I would agree with that.**

14 Q. So at least for the year 2015, would you say  
15 that there's a significant difference between  
16 the accounting methodology for ASR, with a  
17 physical recharge credit, versus the accounting  
18 method for an AMC?

19 **A. I would agree with that, but as you just stated,  
20 it matches very well at lower water levels. In  
21 2015, we had the highest water levels that this  
22 evaluation was completed for.**

23 Q. So in other words, when there's a higher water  
24 level, the correlation isn't as good; is that  
25 correct?

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1 **A. That's correct, at higher water levels, we have**  
 2 **more physical recharge losses due to the water**  
 3 **levels.**  
 4 Q. And, in fact, if you look at 2014, there's --  
 5 there's also a difference of approximately,  
 6 what, about 200 acre-feet difference between the  
 7 two in 2014?  
 8 **A. Approximately 200 feet, yes.**  
 9 Q. Yeah, 240 acre-feet, I guess, to clarify the  
 10 record. So at least in 2014, there was also a  
 11 difference in acre-feet between the two  
 12 accounting methods; is that right?  
 13 **A. That's correct.**  
 14 Q. So what we see in this chart is as the water  
 15 table increases, there's -- there's divergence  
 16 in the correlation between the two accounting  
 17 methods; is that correct?  
 18 **A. Yes.**  
 19 Q. I tried to take careful notes of your testimony  
 20 yesterday, and I believe that you said that, in  
 21 your testimony yesterday, that some water  
 22 migrates out, and there's a percentage of the  
 23 water retained when there's a credit, a physical  
 24 credit put into the aquifer. Was that your  
 25 testimony?

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1 **A. I don't remember it word for word, but when**  
 2 **physical recharge credits are injected at low**  
 3 **water levels or at high water levels, yes,**  
 4 **there's migration and there is a credit loss.**  
 5 Q. And my notes said that you indicated that  
 6 there's about 80 to 85 percent of that water  
 7 that's actually retained. Does that sound like  
 8 your testimony?  
 9 **A. No, that's incorrect. The overall percentage of**  
 10 **water that has been retained for the duration of**  
 11 **the product -- project, excuse me, is between 80**  
 12 **and 85 percent.**  
 13 Q. In front of you should be some white notebooks,  
 14 and I would ask that you --  
 15 **MR. STUCKY:** May I approach the  
 16 witness?  
 17 **PRESIDING OFFICER:** Uh-huh, yes.  
 18 **BY MR. STUCKY:**  
 19 Q. Exhibit 75.  
 20 **A. We had that out yesterday. Do you know what**  
 21 **volume it is?**  
 22 Q. No. Here you go.  
 23 **A. Thanks. Exhibit 75, you said?**  
 24 Q. Yeah.  
 25 **A. Was there something in particular you wanted me**

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1 **to look at?**  
 2 Q. Yeah, have you made it to Exhibit 75, then?  
 3 **A. I have, yes.**  
 4 Q. Now, Exhibit 75, that was introduced yesterday  
 5 into evidence, and you would agree that that's  
 6 an accounting report?  
 7 **A. No, that is an excerpt from an accounting**  
 8 **report.**  
 9 Q. Okay. And at least with this excerpt of the  
 10 accounting report -- well, if we were to look at  
 11 an actual accounting report, it would be much  
 12 thicker. Is that a true statement?  
 13 **A. Yeah, they're 500 pages long.**  
 14 Q. Okay. So this excerpt of an accounting report,  
 15 although still relatively thick, is a condensed  
 16 version of your actual accounting report,  
 17 correct?  
 18 **A. Yeah, it looks like it's the accounting report**  
 19 **without the supporting appendices. The text is**  
 20 **here.**  
 21 Q. In this accounting report, can you tell me how  
 22 many acre-feet it shows of recharge from 2006 to  
 23 2016 in this excerpt? If you could go to  
 24 page 2-4 --  
 25 **A. Yeah.**

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1 Q. -- of that report.  
 2 **A. I was getting there. Was your question the**  
 3 **total volume recharged throughout the life of**  
 4 **the project?**  
 5 Q. That's correct, from 2006 to 2016, how much was  
 6 actually -- how many acre-feet were actually put  
 7 in the ground based on the recharge project?  
 8 **A. Table 2.3, the far right column on page 2-4, the**  
 9 **total volume recharged was 9,844.91 acre-feet.**  
 10 Q. Now, that number wouldn't correlate or directly  
 11 correspond to the total recharge credits that  
 12 were received between 2006 and 2016; is that  
 13 right?  
 14 **A. No, that is not an accounting of the recharge**  
 15 **credits that were calculated and received.**  
 16 Q. So in other words, there's a difference between  
 17 the total amount of acre-feet that was put in  
 18 the ground and the acre-feet of credits that  
 19 were received by the City; is that right?  
 20 **A. Yes.**  
 21 Q. Do you know between 2006 and 2016, based on the  
 22 accounting done by the City, what the total  
 23 number of acre-feet in recharge credits was?  
 24 **A. Should be the last page here or --**  
 25 Q. I'd ask you to flip to 4-10 in that exhibit.

1 **A. It's in here twice. Yeah, the calculated**  
2 **recharge credit for 2016 was 6,372.2.**  
3 Q. What number do you get when you divide 6,372.2  
4 divided by 9,844.91, do you know what number you  
5 get?  
6 **A. Give me a calculator and I'll tell you but I**  
7 **don't -- I can't do that math in my head sitting**  
8 **here, sorry.**  
9 Q. Do you have your cell phone on you?  
10 **A. I do.**  
11 Q. Does it have a calculator on it?  
12 **A. Yes, it does.**  
13 Q. Could you pull out the calculator on your cell  
14 phone and run that calculation for me?  
15 **A. If I did the math right, 6,372.2 divided by**  
16 **9,844.91 is 64.7 percent.**  
17 Q. So in other words, at least during the years  
18 2006 to 2016, would it be your testimony that  
19 only approximately 64 percent of the water that  
20 was actually injected into the aquifer was  
21 retained as a recharge credit?  
22 **A. Based on those numbers, yes. And I realize what**  
23 **my mistake is, and I would like to correct it if**  
24 **you'll allow.**  
25 Q. I will allow you to correct the mistake.

1 question, you have seen the 2017 annual  
2 accounting report for the ASR project, correct?  
3 **A. Yes, I have.**  
4 Q. Having reviewed the 2017 annual accounting  
5 report, would you agree, at least, with me that  
6 that percentage has dipped even further below  
7 64 percent?  
8 **A. I really can't say without doing the math again**  
9 **on 2017. I suspect it's somewhere in that range**  
10 **or even slightly lower.**  
11 Q. Without having to go through that process again  
12 where you pull out your calculator, if I were to  
13 tell you that that percentage is now 63.4  
14 percent, would you have reason to disagree with  
15 what my calculations would be if I did the same  
16 kind of calculation you just performed?  
17 **A. I -- I have no reason to disagree with that.**  
18 Q. So in other words, at least what we've  
19 historically seen is that when water -- 1 gallon  
20 of water is injected into the aquifer, somewhere  
21 in the range of 63 to 64 percent of that water  
22 is actually retained by the City in a credit.  
23 Is that a true statement?  
24 **A. That is what the history shows. And that is**  
25 **caused by the rising water levels moving more**

1 **A. The 80 to 85 percent number is water recharged**  
2 **to the aquifer or diverted to town from 2006 to**  
3 **2017.**  
4 **PRESIDING OFFICER:** I'm sorry, can  
5 you say that again?  
6 **A. The amount of water recharged to the aquifer or**  
7 **diverted to town was -- is 80 to 85 percent. I**  
8 **forgot that my total included that, that was my**  
9 **mistake.**  
10 **BY MR. STUCKY:**  
11 Q. And what's that a percent of when you're  
12 including the water diverted to town?  
13 **A. Water diverted, the percentage of water**  
14 **diverted. Total diverted. It's the amount of**  
15 **water recharged or sent to town divided by the**  
16 **amount of water diverted from the Little Ark**  
17 **River.**  
18 Q. Okay. But you would at least agree that when  
19 we're talking about water that is physically  
20 injected into the aquifer versus the amount of  
21 credits that are retained, that percentage is  
22 closer to 64 percent, you would agree with that?  
23 **A. I would agree with that as of the 2016 report**  
24 **results.**  
25 Q. Have you seen -- well, I know the answer to this

1 **water out of the basin storage area. And the**  
2 **reliance on RB36, which loses 60 percent of the**  
3 **water straight out of the basin storage area**  
4 **when we inject it.**  
5 Q. And with respect to 36, basin storage area 36,  
6 that was left out of the proposal; is that  
7 right?  
8 **A. It is not considered an injection point in the**  
9 **proposal.**  
10 Q. And, in fact --  
11 **A. Or injection with wells in the proposal.**  
12 Q. And, in fact, if Burns & Mac had not  
13 strategically excluded 36 from the report, it  
14 would show a much lower percentage, is that  
15 right, in your report?  
16 **A. Which percentage are you referring to?**  
17 Q. The percentage as far as the leakage on the  
18 water injected?  
19 **A. No. I -- it would be difficult to answer that**  
20 **question because the proposal is based on**  
21 **operations in -- at lowered water levels because**  
22 **the higher water levels are what we're trying to**  
23 **avoid with the proposal, the fact that we can't**  
24 **inject at high water levels. The lower water**  
25 **levels, more is retained in RB36, but I can't**

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1 **speak to exact percentages without lots more**  
 2 **numbers and lots more time on my cell phone.**  
 3 Q. So in other words, you'd have to look through  
 4 some numbers again to refresh your memory, do  
 5 some additional calculations before you could  
 6 answer my question; is that true?  
 7 **A. That would be true.**  
 8 Q. Could you flip to page 4-2 of the City's  
 9 proposal?  
 10 **A. The City's proposal. Okay, I'm on page 4-2.**  
 11 Q. Are you on that page 4-2?  
 12 **A. Yes.**  
 13 Q. I'd ask that you look at the second full  
 14 paragraph, could you read for me the very first  
 15 sentence of that second full paragraph?  
 16 **A. During the 2006 to 2015 period, 85 percent of**  
 17 **water recharged to the aquifer has been retained**  
 18 **as a recharge credit, despite rising water**  
 19 **levels.**  
 20 Q. So I'm going to break down this sentence, it  
 21 says, between the years 2006 and 2015, which  
 22 were the same years we just considered. Would  
 23 you agree, first of all, that those are the same  
 24 years we just discussed?  
 25 **A. No, you had me do the calculation for the year**

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1 **2016.**  
 2 Q. Okay. The same -- well, so we're talking a  
 3 difference between 2015 and 2016, so if we were  
 4 to insert in the sentence during the 2006 to  
 5 2016 period, would you agree that instead of 85  
 6 percent, we should put something more like  
 7 64 percent in this sentence?  
 8 **A. That -- if we were talking about the 2006 to**  
 9 **2016 period, yes, it would be the 65 percent**  
 10 **number that we just calculated. This sentence**  
 11 **is not referring to that time period.**  
 12 Q. But if it were referring to 2006 to 2016, the  
 13 sentence could read that 64 percent of water  
 14 recharged to the aquifer has been retained as a  
 15 recharge credit, despite rising water levels, we  
 16 could revise that percentage, is that your  
 17 testimony?  
 18 **A. I think we just calculated that, yes.**  
 19 Q. Can you point to me or do you have in front of  
 20 you the 2015 annual accounting that would allow  
 21 you to determine how this 85 percent was  
 22 calculated?  
 23 **A. I have no idea what's in your exhibits to tell**  
 24 **you.**  
 25 Q. I'll move on for now. Would you agree that in

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1 your expert report, as it was written, you  
 2 didn't deal with the issue of impairment  
 3 specifically as that terminology is used?  
 4 **A. In the proposal?**  
 5 Q. In your expert report that you submitted?  
 6 **A. Do I still have that in one of these binders?**  
 7 **MR. STUCKY:** May I approach the  
 8 witness?  
 9 **PRESIDING OFFICER:** Yes. Can you  
 10 tell me where to find that? Oh, aren't  
 11 these in the City's binder?  
 12 **MR. STUCKY:** Not the amended one.  
 13 **PRESIDING OFFICER:** Not the amended  
 14 one, okay. If you need this for  
 15 questioning.  
 16 **MR. STUCKY:** It's okay, you can look  
 17 at it.  
 18 **BY MR. STUCKY:**  
 19 Q. Would you agree that, at least in your expert  
 20 report, you don't address the issue of  
 21 impairment specifically?  
 22 **A. It does not look like I do.**  
 23 Q. Would you also agree that, at least in your  
 24 expert report, you don't address the issue of  
 25 water quality?

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1 **A. It does not appear to be in here either.**  
 2 Q. Would you also agree that, at least in your  
 3 expert report, you don't identify or address the  
 4 issue of minimum desirable streamflow?  
 5 **A. I would -- no.**  
 6 Q. In other words, you don't --  
 7 **A. I -- I agree with that.**  
 8 Q. Would you also agree that in your expert report,  
 9 you don't address the issue of safe yield?  
 10 **A. I don't believe there was a question talking**  
 11 **about safe yield in my expert report, no.**  
 12 Q. Would you also agree that you don't identify or  
 13 address how the City's proposal would impact the  
 14 public interest in your expert report?  
 15 **A. No, I believe my questions were more technically**  
 16 **oriented.**  
 17 Q. In the expert or -- I'm sorry, strike that  
 18 question. In the proposal, there's a 5 percent  
 19 annual -- I'm sorry, a 5 percent initial  
 20 gradational loss in the proposal. Is that a  
 21 true statement?  
 22 **A. No, your first statement was more correct,**  
 23 **there's an initial 5 percent annual loss, and**  
 24 **then the gradational losses are taken on top of**  
 25 **that.**

1 Q. The gradational loss is 1, 3, and 5 percent  
2 depending on the area within the basin storage  
3 area the index cell is located, is that -- is  
4 that how that was calculated?

5 **A. Correct.**

6 Q. With respect to the 5 percent initial loss --

7 **A. Uh-huh.**

8 Q. -- if we were to look at 20 -- 2006 to 2016 data  
9 where we talked about that 64 percent, would you  
10 agree that the initial loss of 5 percent should  
11 actually be a higher number based on the data  
12 you just looked at?

13 **A. No.**

14 Q. And why is that?

15 **A. The initial loss was computed -- the idea is to**  
16 **keep the aquifer full, that's the objective of**  
17 **the proposal. The -- what we looked at when**  
18 **determining that were when water levels were**  
19 **lower and we could inject 30 million gallons a**  
20 **day. If the water levels were naturally lowered**  
21 **or the City pumped a lot to make space for**  
22 **natural -- or physical recharge, when the water**  
23 **levels are lower, the modeling shows that the**  
24 **amount retained is slightly over 95 percent of**  
25 **what is injected. So the intent with the 5**

1 100 percent full, then we would reach those  
2 minimum index levels at a later time as far as  
3 the impact would go?

4 **A. Yes, if you start with it fuller and pump out of**  
5 **it at the same rate, it will finish at a higher**  
6 **level.**

7 **MR. STUCKY:** May I approach the  
8 witness?

9 **PRESIDING OFFICER:** Yes.

10 **BY MR. STUCKY:**

11 Q. For the record, I am handing the witness  
12 Mr. Boese's phone, which has the 2015 annual  
13 accounting pulled up on the phone. Would you  
14 agree, as you scroll through that exhibit on  
15 Mr. Boese's phone, that that appears to depict  
16 the 2015, or at least the summary or excerpt of  
17 the 2015 annual accounting?

18 **A. It looks like it. Is it okay to enter evidence**  
19 **this way?**

20 Q. I'm not going to introduce it into evidence,  
21 Mr. McCormick, I'm giving it to you only to  
22 refresh your memory. By scrolling through this  
23 2015 annual accounting, can you tell me from the  
24 years 2006 to 2015 what the total amount of  
25 acre-feet of recharge was during that year --

1 **percent was to mimic the actual physical**  
2 **recharge retention rate at a level where we**  
3 **could inject 30 million gallons a day, at water**  
4 **levels in the aquifer where we could inject 30**  
5 **million gallons a day.**

6 Q. So as you're sitting here today, based on the  
7 numbers you reviewed, you don't believe that  
8 that percentage should go down at all?

9 **A. No. That would be penalizing ourselves and**  
10 **taking additional losses for keeping the aquifer**  
11 **full.**

12 Q. And how did you arrive at the 1998 level where  
13 the aquifer is approximately 91 percent full?

14 **A. We have operational and testing data of the**  
15 **recharge wells, and we used that data to see**  
16 **what rates we could inject water into the ground**  
17 **and what the water levels needed to be to allow**  
18 **that rate of injection. When -- we then took**  
19 **those water levels and compared them to water**  
20 **levels from various years and found the water**  
21 **levels that corresponded most closely to those**  
22 **water levels, and 1998 was identified as the**  
23 **best match to what those water levels were.**

24 Q. And would you agree with Mr. Clement's testimony  
25 that if we were to start with the aquifer

1 those years?

2 **A. The total volume recharged was 6,817.97 feet.**

3 Q. Now can you tell me during 2006 and 2015, what  
4 was the total number of acre-feet that was  
5 retained as credits during that same time  
6 period, for the 2015 annual accounting?

7 **A. Looks like 4,978.2.**

8 **PRESIDING OFFICER:** I'm sorry, could  
9 you please repeat the recharge number.

10 **A. First number?**

11 **PRESIDING OFFICER:** Yes.

12 **MR. STUCKY:** 6,817.97 acre-feet were  
13 physically recharged into the aquifer.

14 **PRESIDING OFFICER:** Thank you.

15 **BY MR. STUCKY:**

16 Q. And the number that was retained as credits was  
17 4,978.2 acre-feet. Does that sound right,  
18 Mr. McCormick?

19 **A. Yes.**

20 Q. And if you were to divide 4,978.2 acre-feet  
21 divided by 6,817.97 acre-feet, if I were to tell  
22 you that percentage is 73.02 percent, would you  
23 have reason to disagree with me?

24 **A. I'm assuming you did it on a phone calculator,**  
25 **so I'll assume that the math is correct.**

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1 Q. And just as an engineer and as a mathematician,  
 2 I think that you could probably look at those  
 3 numbers and see that that percentage would be  
 4 roughly correct; is that -- is that right?  
 5 **A. Roughly, yes.**  
 6 Q. Now, if we go back to page 4-2 of the  
 7 proposal --  
 8 **A. It says 85 percent.**  
 9 Q. Should that number be 73 percent?  
 10 **A. It looks like it should, yes.**  
 11 Q. Yesterday there was also a discussion about some  
 12 errors that were in the proposal. Do you recall  
 13 that discussion?  
 14 **A. Yes.**  
 15 Q. And just to refresh on what some of those errors  
 16 were, we found an error in the minimum index  
 17 levels, is that one of the errors that was  
 18 identified in the table?  
 19 **A. Which table are you referring to?**  
 20 **MR. STUCKY:** Can I have just a  
 21 moment?  
 22 **PRESIDING OFFICER:** Yes.  
 23 **BY MR. STUCKY:**  
 24 Q. Yeah, we noticed that there were some  
 25 contingency errors in table 2-10, is that a true

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1 recitation of the testimony from yesterday?  
 2 **A. There is an error in the number. Now I've**  
 3 **managed to confuse myself. There was not an**  
 4 **error with the proposed minimum index level;**  
 5 **there was an error in the table identifying how**  
 6 **that was calculated.**  
 7 Q. And there was also an error in table 2-5; is  
 8 that -- is that right?  
 9 **A. Yes, that error has been identified and talked**  
 10 **about repeatedly over the last five days of**  
 11 **this.**  
 12 Q. And there was another error that was identified  
 13 with respect to Cheney Reservoir starting at  
 14 110 percent versus 100 percent; is that also  
 15 right?  
 16 **A. Yes. Those errors were identified as typos or**  
 17 **reporting errors. And I would classify the 85**  
 18 **percent that we just discussed and Mr. Boese**  
 19 **calculated at 73 percent as also being a**  
 20 **reporting error.**  
 21 Q. And just now we identified another error that  
 22 was found on page 4-2 of the proposal; is that  
 23 correct?  
 24 **A. That's what I just stated.**  
 25 Q. So my question to you is this: We're

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1 discovering errors as this hearing process is  
 2 unfolding. As you're sitting here today and  
 3 having carefully reviewed this entire proposal,  
 4 are you aware of any other errors in the  
 5 proposal?  
 6 **A. I am not, no. That's why they're being**  
 7 **identified now.**  
 8 **MR. STUCKY:** No further questions at  
 9 this moment.  
 10 **PRESIDING OFFICER:** Ms. Wendling.  
 11 **A. I'm keeping your phone, Tim.**  
 12  
 13 **CROSS-EXAMINATION**  
 14 **BY MS. WENDLING:**  
 15 Q. I believe your CV says you served as a project  
 16 manager for the proposal; is that correct?  
 17 **A. That's correct.**  
 18 Q. What are your responsibilities as the project  
 19 manager?  
 20 **A. Invoicing, tracking, coordinating, scheduling,**  
 21 **that's what --**  
 22 Q. Do you have roles other than serving as a  
 23 project manager?  
 24 **A. I also did significant technical work in the**  
 25 **proposal.**

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1 Q. Can you elaborate on that technical work?  
 2 **A. I did all of the groundwater modeling with**  
 3 **MODFLOW.**  
 4 Q. Okay.  
 5 **A. With the assistance of Mr. Clement in some**  
 6 **inputs development.**  
 7 Q. Can you clarify what roles you performed and  
 8 what roles Mr. Clement performed?  
 9 **A. Mr. Clement excels at GIS work, operating the**  
 10 **geographic information system, which is when the**  
 11 **data comes in clipping it to the area of the**  
 12 **model and processing the input files, the**  
 13 **pumping input files to take the large data sets**  
 14 **from DWR and incorporate them into the model.**  
 15 Q. And you did the rest of the work?  
 16 **A. For the most part, yes.**  
 17 Q. In translating the modeling work to the actual  
 18 proposal being the tables and the narrative,  
 19 what role did you play in the proposal as a  
 20 document?  
 21 **A. I mostly took the input data and provided the**  
 22 **output file. I'm trying to remember. I don't**  
 23 **believe I did much of the technical writing at**  
 24 **all in the development of -- of figures or**  
 25 **anything like that.**

1 Q. The figures in the proposal would be based on  
2 the output data you just mentioned?  
3 **A. That is correct.**  
4 Q. But --  
5 **A. Daniel would typically take those, the output**  
6 **files from the model and import those into GIS**  
7 **to overlay to get these nice figures.**  
8 Q. Okay. So Mr. Clement would be responsible for  
9 these tables, the beautiful tables contained  
10 within the proposal?  
11 **A. I believe so. I believe he made the majority of**  
12 **those tables.**  
13 Q. Okay. And do you recall the specific scope of  
14 work Burns & McDonnell was tasked with for this  
15 project?  
16 **A. I do not remember the scope word for word.**  
17 **Basically, it was to evaluate the water levels**  
18 **that would be -- we'd like to lower the '93**  
19 **water levels to, the new proposed minimum index**  
20 **levels, and then to develop the aquifer**  
21 **maintenance concept and an accounting method,**  
22 **simplified accounting method to account for**  
23 **using that AMC concept.**  
24 Q. So prior to being engaged, the City already knew  
25 they wanted to lower the minimum index level?

1 **A. Yeah, there'd been discussions for sometime, I**  
2 **believe, that the '93 index levels were not**  
3 **adequate or appropriate.**  
4 Q. And based on Mr. Clement's testimony, he was  
5 involved in doing a drought reconstruction; is  
6 that correct?  
7 **A. Constructing a 1 percent drought?**  
8 Q. Uh-huh.  
9 **A. Yes, he was involved in that.**  
10 Q. So --  
11 **A. I was involved in discussions as part of that; I**  
12 **didn't do the technical evaluation of that.**  
13 Q. So prior to the 1 percent drought  
14 reconstruction, the conclusion of lowering the  
15 minimum index levels had already been made?  
16 **A. We knew that the '93 water levels needed to**  
17 **be -- were not low enough, were not sufficient**  
18 **for recovering recharge credits.**  
19 Q. And how did you know that?  
20 **A. Just based on the operations of the wells over**  
21 **the previous years, physical data measurements**  
22 **that we've taken, and looking at the estimated**  
23 **water levels for -- under pumping conditions.**  
24 Q. Had those same criteria been looked at during  
25 the Phase II design and planning?

1 **A. I believe they were considered during that time,**  
2 **yes.**  
3 Q. And the minimum index levels were part of the  
4 Phase II -- I and II process and communicated to  
5 the City prior to construction; is that correct?  
6 **A. I believe that the minimum levels were assigned**  
7 **to the Phase I wells initially. My**  
8 **understanding was that they were not intended to**  
9 **be applied to the Phase II initially, but they**  
10 **were left in as a permit condition when the**  
11 **permits were issued.**  
12 Q. So you believe it was an accident that there are  
13 minimum index levels?  
14 **A. I believe that Phase II was not originally**  
15 **intended that there would be limits on it based**  
16 **on the operational data from operating Phase I**  
17 **for a couple years.**  
18 Q. But you were aware of the minimum index levels  
19 prior to Phase II being implemented?  
20 **A. Yes.**  
21 Q. Okay. And at that point in time, did you raise  
22 any concerns that those minimum index levels  
23 were unreasonable?  
24 **A. We did not do the permitting for the Phase II --**  
25 Q. At the time you were planning and getting ready

1 to implement Phase II, did you raise an issue  
2 with the minimum index levels?  
3 **A. We did not say any -- or I did not say anything**  
4 **to -- about it at that time.**  
5 Q. I believe yesterday you said you were involved  
6 with Phase II?  
7 **A. I was.**  
8 Q. Were you involved with the planning of Phase II?  
9 **A. Yes.**  
10 Q. Were you involved with the implementation of  
11 Phase II?  
12 **A. Yes.**  
13 Q. Were you involved with the budgeting for Phase  
14 II?  
15 **A. Yes.**  
16 Q. Do you -- have you served as a project manager  
17 for other projects for the City of Wichita?  
18 **A. Yes.**  
19 Q. Do you -- approximately how much of your time is  
20 spent on projects for clients other than the  
21 City of Wichita?  
22 **A. That varies by year, but I would say, and this**  
23 **is just a guess, but I would say less than --**  
24 **less than 50 percent of my time is spent on**  
25 **Wichita currently. In the past, it has been**



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1 more than 50 percent. Overall average would  
 2 probably be less than 50 percent.  
 3 Q. Okay. Going back to the models that you took  
 4 the inputs and put those into the model to find  
 5 the output; is that correct?  
 6 **A. That's correct.**  
 7 Q. And those inputs, that would include the Wichita  
 8 demand projections worked on by Mr. Macey?  
 9 **A. That's correct.**  
 10 Q. The 2011 and 2012 data worked on by Mr. Clement?  
 11 **A. I -- I would have come up with the hydrologic**  
 12 **data. Daniel would have pulled the pumping data**  
 13 **and cropped the selection down to just wells**  
 14 **that are actually in the model. And --**  
 15 Q. When you were coming up with the hydrologic  
 16 data, you are creating that data, or you're  
 17 pulling it from another source?  
 18 **A. I would be getting that from the USGS, NOAA,**  
 19 **National Oceanic Atmospheric Administration, and**  
 20 **GMD2's weather stations and Kansas Geologic**  
 21 **Survey.**  
 22 Q. Were there any other data inputs that needed to  
 23 be added to the model?  
 24 **A. The stream data.**  
 25 Q. And where did you get that?

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1 **A. Daniel pulled that from the USGS river gages.**  
 2 Q. Okay. So once the model has these inputs and  
 3 you get the output, was there any analysis of  
 4 those outputs, or was that all Mr. Clement?  
 5 **A. I would have analyzed it from the perspective of**  
 6 **does it look right, do I -- did I double type a**  
 7 **number and we've got too much water coming out**  
 8 **from this location, not enough here, something**  
 9 **happened, making sure the calculations looked**  
 10 **correct, evaluating the running of the model,**  
 11 **but then basically I would give the resultant**  
 12 **water levels over to Daniel and he would do the**  
 13 **analysis.**  
 14 Q. How do you go from, you and Mr. Clement, we'll  
 15 say Burns & Mac, go from the output data and  
 16 that information to the recommendations actually  
 17 contained in the text of the proposal?  
 18 **A. Well, we look at our water level results, and in**  
 19 **this case we were determining how far down the**  
 20 **water was drawn on each index cell based on the**  
 21 **pumping criteria that we put in, so we would**  
 22 **evaluate what those water levels were and --**  
 23 Q. When you say we, can you clarify when it's Burns  
 24 & McDonnell and when it's the City of Wichita?  
 25 **A. Oh, I'm sorry, Daniel and I would sit down**

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1 together and look at the maps that he had put  
 2 together, looked at what the resultant water  
 3 levels were, and evaluated the geology and the  
 4 result of each thing for -- to come up with a  
 5 recommendation for the water levels in each  
 6 index cell.  
 7 Q. And those recommendations you then made to the  
 8 City of Wichita?  
 9 **A. We would -- once we were comfortable with our**  
 10 **results, we would review what we had found with**  
 11 **the City of Wichita, let them know what we had**  
 12 **found.**  
 13 Q. So those recommendations initially would not  
 14 have included the contingency?  
 15 **A. We would have added a contingency on at that**  
 16 **time.**  
 17 Q. All right.  
 18 **A. Prior -- prior to our discussions, we would have**  
 19 **said we would recommend a contingency based on**  
 20 **this or this is our recommended level based on**  
 21 **our evaluation.**  
 22 Q. So based on what you're able to remember today,  
 23 when you met with the City to discuss the  
 24 recommended levels, you did have a contingency  
 25 in that initial recommendation?

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1 **A. I -- I believe so, yes.**  
 2 Q. And do you recall whether that was 5 or 10 feet?  
 3 **A. I believe the initial contingency was 5 feet. I**  
 4 **believe.**  
 5 Q. Okay. Did you have any role in recommending  
 6 that the 1 percent drought be spread over eight  
 7 years?  
 8 **A. No, I -- I looked at the work that Daniel and**  
 9 **Scott Macey had done to determine what the --**  
 10 **what represented a 1 percent drought and**  
 11 **included Mr. Winchester's report of his**  
 12 **calculations, compared their results and looked**  
 13 **it over to make sure, you know, gut check that**  
 14 **it made sense from that perspective, and then**  
 15 **took their recommendations and used them.**  
 16 Q. In any of your past experience, have you modeled  
 17 a 1 percent drought over eight years for  
 18 planning purposes?  
 19 **A. No, I don't believe I've modeled a 1 percent**  
 20 **drought. The drought -- a 1 percent drought, as**  
 21 **has been explained, has to do with duration and**  
 22 **severity, so specifically an eight-year period**  
 23 **we've used in this case.**  
 24 Q. Can you have a 1 percent drought with a duration  
 25 of anything other than eight years? Or is that

1 outside of your area of expertise?  
2 **A. I would defer to Mr. Winchester to make that.**  
3 Q. Going to the 1998 levels, are the groundwater  
4 levels represented at the end of 1998  
5 representative of average aquifer conditions?  
6 **A. I have not made that analysis, so I couldn't**  
7 **tell you that. The -- the water levels change**  
8 **constantly in the aquifer.**  
9 Q. Okay. Is there data that would show post  
10 development an average aquifer level in that --  
11 **A. That analysis could be done, yes.**  
12 Q. But to your knowledge has not been done?  
13 **A. I am not aware of it.**  
14 Q. Is there any scientific reason to believe that  
15 when the next drought, severe drought occurs the  
16 aquifer would be 91 percent full?  
17 **A. I think that under the current conditions that**  
18 **the aquifer operates and exists that you could**  
19 **pick any number and say that that's a reasonable**  
20 **starting point for the next drought because you**  
21 **don't know when the drought is going to occur**  
22 **and you don't know what the -- what would happen**  
23 **before it, that would be pure ...**  
24 Q. In planning for a drought, to be able to meet  
25 customer demand, would it be prudent to look at

1 Q. Okay. I believe you said the purpose of the  
2 proposal is to keep the aquifer full?  
3 **A. I did say that.**  
4 Q. And so that would be looking similar to, I  
5 believe, is it 2016 levels, if we go to table  
6 4-2 of the proposal? If you look at table 4-2  
7 on page 4-6 of the proposal, we look at the  
8 recharge capacity from the proposed and current  
9 accounting process, correct?  
10 **A. That's correct.**  
11 Q. And you mentioned that 2015 was a year with high  
12 aquifer levels?  
13 **A. That is correct.**  
14 Q. So if the City is successful in keeping the  
15 aquifer high, would we anticipate similar levels  
16 to 2015?  
17 **A. I believe they'd be higher than 2015.**  
18 Q. Okay. And the discrepancies in the actual  
19 accounting or actual recharge -- actual  
20 cumulative physical recharge column compared to  
21 the proposed accounting process, you said -- you  
22 said earlier that difference between those  
23 quantities gets larger as water levels increase?  
24 **A. I did say that, and that's correct.**  
25 Q. So we're anticipating in this proposal a

1 more than one starting condition for the  
2 aquifer?  
3 **A. I think the evaluation can be made that if you**  
4 **start at level X and your water levels drop to**  
5 **level Y and if you start at a water level of X**  
6 **plus 10 feet, it's a reasonable assumption that**  
7 **your finishing water levels will be at Y plus**  
8 **10 feet. You're starting at the same place,**  
9 **taking the same volume out, you're going to get**  
10 **the same drop in aquifer levels, so I believe**  
11 **the evaluation could be made off of -- based off**  
12 **of that depending on where your starting level**  
13 **actually is.**  
14 Q. If all you're looking at is the water level at  
15 the end of a drought?  
16 **A. Uh-huh.**  
17 Q. So if I actually want to look at water quality  
18 or potential impairment, would it be worthwhile  
19 to consider more than one potential starting  
20 point?  
21 **A. Again, I think the changes in the aquifer would**  
22 **be directly related to your starting water level**  
23 **in such a way that you could make that**  
24 **evaluation based on where your water level**  
25 **starts.**

1 scenario where the water levels are higher than  
2 they were in 2015, is it reasonable, then, to  
3 assume that the discrepancy between the actual  
4 cumulative physical recharge credits earned and  
5 the recharge credits calculated with the  
6 proposed accounting system, that difference will  
7 become even larger?  
8 **A. The difference between physical recharge**  
9 **credits?**  
10 Q. The two accounting methods? The accounting  
11 methods as described on table 4-2 on page 4-6?  
12 **A. Yes, I think that is a reasonable assumption**  
13 **that if you continued on with the physical**  
14 **recharge, it would continue to have a larger**  
15 **separation.**  
16 Q. And was the goal of the proposed accounting  
17 process to mirror the results of what would have  
18 actually occurred?  
19 **A. The goal of the proposed accounting method is**  
20 **to -- sort of twofold. The physical recharge**  
21 **losses and the ability to recharge, actually**  
22 **physically put water in the ground goes down as**  
23 **you -- as water levels come up. To avoid**  
24 **pumping a hole and keeping the aquifer at a**  
25 **level that we can inject to increase the City's**

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1 recharge credits available, we tried to mimic  
 2 the accounting at the lower levels because we  
 3 see a higher loss and higher penalty when it  
 4 gets full and we can't accumulate recharge  
 5 credits.  
 6 Q. Okay. Have you looked at the aquifer and how it  
 7 responded to the 1930s drought?  
 8 A. Yes.  
 9 Q. And do you have any data on how long it took the  
 10 aquifer to recover from the 1930s drought?  
 11 A. That data exists but I can't quote what it is  
 12 right now.  
 13 Q. Where would I find that data?  
 14 A. I believe the USGS has a number of reports that  
 15 show water level trends and graphs, would be a  
 16 good place to start.  
 17 Q. All right. You mentioned, I believe, yesterday  
 18 that your seal is on the proposal document?  
 19 A. It is.  
 20 Q. What is the significance of your seal being on  
 21 that document?  
 22 A. It means that I have reviewed the work that went  
 23 into this or directly supervised the work that  
 24 went into this and agree that it was done using  
 25 proper methods and properly reports the facts of

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1 the analysis that we did.  
 2 Q. And do you, in the course of your work, put your  
 3 seal on a large number of documents?  
 4 A. I do not.  
 5 Q. Okay.  
 6 A. The ones that are required and -- and I would  
 7 estimate that I have sealed on the order of 30  
 8 reports in my career.  
 9 Q. Okay. And that would include the annual  
 10 accounting reports performed every year?  
 11 A. That is correct.  
 12 Q. So what steps do you personally take in  
 13 reviewing the document before attaching your  
 14 seal?  
 15 A. I review the technical work that goes into it, I  
 16 work with the people, overseeing what they're  
 17 doing and discussing their results to make sure  
 18 that they're done appropriately and the methods  
 19 used meet basic engineering methodology  
 20 requirements and criteria.  
 21 Q. Does the quality control process at Burns &  
 22 McDonnell involve reviewing the proposal  
 23 document in this case?  
 24 A. Yes, it does.  
 25 Q. And were you involved in that quality control

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1 process?  
 2 A. Yes, I was.  
 3 Q. Are you concerned at all with the number of what  
 4 you characterized as typos in the proposal  
 5 document knowing that it went through a quality  
 6 control process and it has your seal?  
 7 A. It bothers me anytime I find an error or a typo  
 8 or anything like. Bothers me more when I find  
 9 something that was technically wrong, and that  
 10 typically doesn't happen.  
 11 Q. How can we be confident that a difference, say,  
 12 73 percent to 85 percent is not technically  
 13 wrong, that it is only a typo, what assurances  
 14 can we have that that was purely a typographical  
 15 error?  
 16 A. I can assure you sitting here that it was.  
 17 Other than that, other than just you trusting my  
 18 word, I don't know that you -- there is anything  
 19 that you can do.  
 20 Q. How can I be sure that that -- that change, if  
 21 you change the 85 percent down to 73 percent  
 22 does not impact anything else within the  
 23 document?  
 24 A. Well, in that particular case, that's a  
 25 reporting of a figure that doesn't apply to any

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1 of the other numbers that are being used within  
 2 it, it's simply reporting of a figure. So --  
 3 Q. So --  
 4 A. -- that particular one --  
 5 Q. -- the errors in table 2-3 or 2-5, those impact  
 6 other aspects of the proposal. What can be done  
 7 to ensure that those were only typographical  
 8 errors and not impacting anything else within  
 9 the proposal?  
 10 A. We can certainly go back and look at the math in  
 11 the tables and cross-check it. And in all  
 12 honesty, the table numbers that have been  
 13 brought up repeatedly in testimony, we have done  
 14 that and gone back and double-checked to make  
 15 sure that it was just a math error, and that is  
 16 what it turned out to be. Or not a math error  
 17 but a typing in the printed document, printed  
 18 table.  
 19 Q. Were you -- I can't remember what you said  
 20 earlier, with regard to Phase II, did you  
 21 perform any modeling in the planning of ASR  
 22 Phase II?  
 23 A. I did not do any modeling for the planning of  
 24 Phase II.  
 25 Q. Okay. Did anyone else at Burns & McDonnell do

1 modeling for Phase II?  
2 **A. After I came to the company in March of 2007, I**  
3 **do not recall any modeling done. Prior to that**  
4 **I can't speak to.**  
5 Q. Before submitting a project as large as Phase  
6 II, do you believe that someone would have done  
7 some modeling?  
8 **A. I would suspect so.**  
9 Q. But you don't recall if that was Burns &  
10 McDonnell or someone else?  
11 **A. I -- I do not recall seeing modeling results**  
12 **from anyone.**  
13 Q. Okay. What involvement did you have with ASR  
14 Phase II if it was not pertaining to modeling?  
15 **A. I supervised the -- some of the test drilling of**  
16 **pilot holes for the wells, I supervised**  
17 **construction and drilling of the actual wells.**  
18 **I assisted with the design of the well houses**  
19 **and the equipment contained in the well houses,**  
20 **supervised development and testing of the wells.**  
21 Q. Are you aware that the performance expectations  
22 for ASR Phase II were revised at some point?  
23 **A. What performance expectations in particular are**  
24 **you referring to?**  
25 Q. The recharge capacity?

1 **A. There were many calculations of the potential**  
2 **recharge capacity evaluated.**  
3 Q. Okay.  
4 **A. There were -- was the initial design based on**  
5 **our -- the pilot testing holes, and then I**  
6 **believe it was revised with the actual flow**  
7 **rates calculated after we tested the wells, once**  
8 **they were installed.**  
9 Q. Okay. So if I had read a headline around April  
10 of 2014 that the performance expectations of  
11 Phase II were cut in half, would that sound  
12 familiar to you?  
13 **A. I don't believe there was any revision that was**  
14 **on that magnitude.**  
15 Q. Okay. Have you heard that the original belief  
16 would have been, of capacity, was 11,000  
17 acre-feet per year?  
18 **A. Phase II was designed to be a 30 million gallon**  
19 **a day -- have a 30 million gallon per day**  
20 **injection capacity. I'm not sure --**  
21 Q. So for Phase II, was it not considered how  
22 much -- how many recharge credits could actually  
23 be earned with Phase II?  
24 **A. You're looking at a different thing when you're**  
25 **putting in the wells and installing them, you're**

1 **looking at maximizing individual recharge**  
2 **capacity and making sure that it meets the goal**  
3 **of a total of 30 million gallons a day to be put**  
4 **in the ground. The amount of recharge credits**  
5 **that you can earn annually depends on the**  
6 **individual year and the number of days operated.**  
7 **I don't -- I don't recall ever having a goal of**  
8 **developing a recharge system that could earn X**  
9 **number of credits in years due to that**  
10 **variability of operating days.**  
11 Q. Okay. And in your opinion, has Phase II of the  
12 ASR project met its intended goal?  
13 **A. Yeah, we -- we exceeded the 30 million gallon a**  
14 **day recharge capacity.**  
15 Q. So if that were the only goal, that -- okay.  
16 Have you done or performed any modeling to  
17 estimate how long it would take the City to  
18 accumulate 120,000 acre-feet in recharge  
19 credits?  
20 **A. I have not run a MODFLOW model for that sort of**  
21 **duration to determine that. I believe we've**  
22 **done back-of-the-napkin type of calculations of,**  
23 **hey, if we got this many every year, how many**  
24 **years would it take.**  
25 Q. Okay. And can you share any more detail of

1 those back-of-the-napkin calculations?  
2 **A. Again, it depends on water levels and**  
3 **conditions, and I don't -- I don't remember any**  
4 **of the numbers off the top of my head, no.**  
5 Q. We talked about recharge basin 36 not being well  
6 suited for recharge due to its location; is that  
7 correct?  
8 **A. We've talked about it not being well suited for**  
9 **accumulating recharge credits due to its**  
10 **location.**  
11 Q. Okay. Now, when we look at recharge basin 1,  
12 does it have a similar issue?  
13 **A. Recharge basin 1 is a nice swimming pool, it**  
14 **does not take water well at all.**  
15 Q. Okay. Did you look at the impact caused by the  
16 proposed pumping identified in table 2.5 -- 2-5?  
17 **A. Yeah.**  
18 Q. And in part of that, did you identify the  
19 potential cone of depression from the pumping  
20 contemplated in 2-5?  
21 **A. Yes.**  
22 Q. And do you recall how large that cone of  
23 depression could be at any given well?  
24 **A. It varies for every well, I couldn't tell you**  
25 **specific numbers for any well.**

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1 Q. Do you have a range?  
 2 **A. Not that I could speak to, no, not off the top**  
 3 **of my head.**  
 4 Q. Is there any data to support that it would not  
 5 exceed 660 feet?  
 6 **A. The individual calculations would support or not**  
 7 **support that based on whatever the result of the**  
 8 **numbers were.**  
 9 Q. But those calculations have not been done?  
 10 **A. We've done those calculations, I just don't know**  
 11 **the numbers.**  
 12 Q. Okay. Are those calculations included in the  
 13 proposal?  
 14 **A. There's water level maps in the proposal, I**  
 15 **believe, showing not individual cone of**  
 16 **depressions but overall --**  
 17 Q. Cone of depression is what I'm interested in  
 18 rather than average water level.  
 19 **A. No, I don't believe those are included in the**  
 20 **proposal.**  
 21 Q. Okay. With the ASR project, I understand that a  
 22 portion of the water diverted from the Little  
 23 Arkansas is used in operations to flush  
 24 pipelines, fill tanks, and drain pipelines; is  
 25 that correct?

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1 **A. There are losses that occur with that, yes.**  
 2 Q. And do you know the figure on what percentage of  
 3 the water diverted is lost to those  
 4 operational ...  
 5 **A. It varies widely every year due to which wells**  
 6 **are being used or how the water's routed, how**  
 7 **long you can inject, how many times you have**  
 8 **to -- how many times you have to fill the pipe**  
 9 **with recharge water to the well and then shut it**  
 10 **off.**  
 11 Q. Okay. Under the AMC proposal where water is  
 12 diverted from the Little Arkansas, treated, and  
 13 used by the water utility for customers, does  
 14 that operational loss still occur?  
 15 **A. That's the -- or part of the 5 percent loss.**  
 16 Q. Okay. And would the operational loss be the  
 17 same for, we'll say, AMCs versus physical  
 18 recharge?  
 19 **A. Again, that would depend on a number of**  
 20 **operational factors, like how many times you**  
 21 **turn it on and turn it off and how long a**  
 22 **duration you can pump.**  
 23 Q. Pumping meaning it's part of your diversion from  
 24 the Little Arkansas?  
 25 **A. Yes.**

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1 Q. So all of those operational losses are in terms  
 2 of diverting it from the Little Arkansas and not  
 3 for injection?  
 4 **A. No. There are losses -- there are losses in the**  
 5 **pipelines after the process -- after the**  
 6 **treatment process is complete, from the high**  
 7 **service pumping station at the discharge point**  
 8 **of the recharge -- or the treatment plant, from**  
 9 **there to the wells, there are additional losses**  
 10 **that are factored in there.**  
 11 Q. Okay. And that is only discharging back to the  
 12 well, you wouldn't have that loss if you  
 13 discharged directly to the City for use?  
 14 **A. I believe there would be some losses diverting**  
 15 **directly to the City, but I think that -- I'm**  
 16 **not sure how they compare to the losses to the**  
 17 **wells.**  
 18 Q. In the work done by Burns & McDonnell, was  
 19 anything done to predict the future chloride  
 20 movement from the Burrton chloride plume towards  
 21 the well field as a result of the lowered  
 22 minimum index levels?  
 23 **A. We did not do any chloride migration modeling,**  
 24 **but the Phase I wells were excluded from the**  
 25 **proposal for the reason of maintaining the**

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1 **groundwater barrier along the western edge of**  
 2 **the well field.**  
 3 Q. Did you predict -- well, because you didn't do  
 4 any chloride modeling, so does the previous  
 5 chloride migration work predict the result of  
 6 pumping down the aquifer as proposed in table  
 7 2-5?  
 8 **A. There is a USGS report that is recent, I can't**  
 9 **quote the name or the date, it's in here**  
 10 **somewhere, that talks about lowered water**  
 11 **levels. I don't know if they are specific to**  
 12 **the proposed index levels or not, but it**  
 13 **assesses the chloride migration at varying water**  
 14 **levels in the Wichita well field.**  
 15 Q. Okay. But you don't know if those levels  
 16 contemplated by the USGS in that report are at  
 17 all similar to the levels, the minimum index  
 18 levels proposed?  
 19 **A. I don't know what the -- how the water levels**  
 20 **compare, no.**  
 21 Q. Okay. Did you do any work to understand the  
 22 chloride movement from -- from Burrton chloride  
 23 plume if 120,000 acre-feet of AMCs were  
 24 withdrawn from the aquifer?  
 25 **A. No.**

1 Q. Did you do any work to understand the future  
2 chloride movement from the Arkansas River if the  
3 minimum water was drawn down to the minimum  
4 index level?  
5 **A. We did not model chloride migration. Again,**  
6 **that USGS report, I believe, addresses that.**  
7 Q. The USGS report, you believe, addresses chloride  
8 from both the Burrton chloride plume --  
9 **A. From both the Ark and the Burrton plume.**  
10 Q. And did you incorporate that analysis into your  
11 proposal?  
12 **A. We did not include that report in our -- as an**  
13 **appendix of the proposal.**  
14 Q. Did you do any work to look at the environmental  
15 impact of drawing water -- the aquifer down to  
16 the proposed minimum index level?  
17 **A. What sort of environmental impacts are you**  
18 **specifically talking about?**  
19 Q. Well, for example, would water being drawn down  
20 to the lowered minimum index levels impact  
21 streamflow and cause more days below minimum  
22 desirable streamflow and could that have an  
23 impact on wildlife?  
24 **A. We did not specifically evaluate MDS from that**  
25 **perspective, no.**

1 Q. Have you attempted to quantify the impact of  
2 rainfall on -- I guess quantify natural  
3 recharge?  
4 **A. Yes.**  
5 Q. And where is that data?  
6 **A. That's incorporated into the model, and it**  
7 **causes the changes in -- or is part of the cause**  
8 **of changes in water level within the model.**  
9 Q. Okay. And I believe yesterday we learned that  
10 the precipitation information included in the  
11 model is based on what occurred in 2011 and  
12 2012?  
13 **A. That's correct. And 2010 for the final two**  
14 **years of the model.**  
15 **MS. WENDLING:** Okay. I have no  
16 further questions.  
17 **PRESIDING OFFICER:** It's about  
18 11:00 o'clock, let's take about a  
19 ten-minute break.  
20 (Thereupon, a recess was taken;  
21 whereupon, the following was had.)  
22 **PRESIDING OFFICER:** Okay. We're  
23 back on the record, and I think,  
24 Mr. McLeod.  
25 **MR. MCLEOD:** Yes, I do have some

1 Q. Did you do any analysis of the environmental  
2 impact of drawing the aquifer down to minimum --  
3 proposed minimum index levels?  
4 **A. Not on wildlife or anything like that, no.**  
5 Q. One purpose of the ASR project has been  
6 repurposing the overall ASR to meet customer --  
7 one purpose of the project has been expressed to  
8 meet customer demand during an extreme drought.  
9 And two options have been presented to achieve  
10 that, with one being the proposal as presented  
11 and the second being to intentionally pump a  
12 hole in the aquifer to make room for artificial  
13 recharge. Based on your experience, are these  
14 the only two potential options available to the  
15 City in order to meet customer demands during an  
16 extreme drought?  
17 **A. I know the City has looked at multiple options,**  
18 **but I don't have any direct knowledge of that.**  
19 Q. And is it your belief that the City and the City  
20 alone is responsible for the fullness of the  
21 aquifer?  
22 **A. I believe the City's management efforts have had**  
23 **a significant impact on filling the aquifer. I**  
24 **believe the rainfall probably had something to**  
25 **do with it too.**

1 redirect.  
2  
3 **REDIRECT EXAMINATION**  
4 **BY MR. MCLEOD:**  
5 Q. Mr. McCormick, Mr. Stucky had asked you a  
6 question about is an AMC accumulated when water  
7 is sent to the City, and you agreed that that  
8 was the case. But what else has to be true? I  
9 mean, if the City sends water from the river for  
10 City use when it could have recharged that in  
11 the aquifer, does the City get a credit for  
12 that?  
13 **A. Well, the City has to divert it, pump it, treat**  
14 **it, and then send it down to the City where it's**  
15 **treated again.**  
16 Q. Does the City get a credit whenever it does  
17 that, even if it had space in the aquifer that  
18 it could have put that water in the aquifer?  
19 **A. I'm sorry, I guess I'm not following your**  
20 **question.**  
21 Q. So as asked and answered, the answer suggested  
22 that the City gets an AMC simply for taking  
23 water from the river for direct use, and I'm  
24 asking you is it that simple, or are there more  
25 conditions, are there other things that have to

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1 be true before the City gets an AMC for taking  
 2 water from the river for direct use?  
 3 **A. Yes, the river has to be above base flow and**  
 4 **meet the triggering criteria before it can be**  
 5 **diverted. It has to go through the treatment**  
 6 **plant and receive treatment and then it is sent**  
 7 **to the City.**  
 8 Q. And does there also need to be a restriction on  
 9 the City's ability to put that water in the  
 10 aquifer such that --  
 11 **A. Yes.**  
 12 Q. -- the only thing the City can do is take it for  
 13 direct use?  
 14 **A. Yes, the water level has to be high enough that**  
 15 **it cannot physically meet the operational**  
 16 **criteria for physical injection.**  
 17 Q. And under the accounting method for AMCs, is the  
 18 AMC, when one is accumulated, based on the  
 19 quantity that's diverted from the river or the  
 20 quantity of water that is accordingly left in  
 21 the aquifer?  
 22 **A. It's based on what's left in the aquifer.**  
 23 Q. There were a lot of questions about index cell  
 24 12 here in the Halstead area and the water  
 25 levels in that index cell not varying through

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1 the modeled period of the eight-year drought.  
 2 Do you know if there are municipal facilities  
 3 within that index cell such as perhaps a  
 4 low-head dam that might affect the supply to  
 5 that index cell from the river?  
 6 **A. Yeah, there's a low-head dam that -- on the**  
 7 **Little Ark and water levels don't fluctuate in**  
 8 **there, in that area. Even during 2011 and 2012,**  
 9 **the water levels in the aquifer and index well**  
 10 **12 only fluctuated about 2 feet over the entire**  
 11 **duration. It just stays full up there. Which**  
 12 **is a good thing.**  
 13 Q. So with respect to the four errors that the  
 14 District has brought to the attention of the  
 15 hearing officer and of record, is one of the  
 16 purposes of coming to a hearing with material  
 17 and affording other parties input, is one of the  
 18 purposes to identify and correct errors?  
 19 **A. Yes.**  
 20 Q. And, similarly, with respect to the comments  
 21 today on errors in some of the ASR accounting  
 22 reports, is one of the reasons that you send a  
 23 copy of that report to the Groundwater  
 24 Management District so that they can review it  
 25 and furnish comments and help identify any

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1 issues?  
 2 **A. Yes, it is. I prefer it when nobody finds any,**  
 3 **but that doesn't always happen.**  
 4 Q. With respect to the discussion of contingency,  
 5 and I believe we began the whole thing with  
 6 reference to Mr. Clement's testimony of  
 7 yesterday, do you recall when Mr. Clement was on  
 8 the stand he identified some of the discussions,  
 9 some of the uncertainties of touching on things  
 10 like multi-year flex plans, the individual  
 11 behavior of well users other than the City that  
 12 we cannot know or control, are those the kinds  
 13 of things that are elements in setting a  
 14 contingency?  
 15 **A. Yes.**  
 16 Q. Is it common practice in engineering and  
 17 modeling to use a contingency when you have  
 18 areas of uncertainty that may affect the  
 19 validity of your results?  
 20 **A. Yes, standard practice.**  
 21 Q. And what are the ramifications of setting lower  
 22 index levels here if you don't apply enough  
 23 contingency?  
 24 **A. The potential for having to come back and change**  
 25 **them again.**

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1 Q. And so one reason to set a contingency level  
 2 conservatively low would be to avoid having to  
 3 come back to a future hearing if it's not set  
 4 low enough, correct?  
 5 **A. Correct.**  
 6 Q. There was reference, I believe, by Ms. Wendling  
 7 to recharge basin number 1, and you indicated  
 8 that basin does not -- does not take water well.  
 9 Do you know if the City has installed an  
 10 injection well in the same area to address the  
 11 functional issues with that basin?  
 12 **A. Yes, RR05 was installed to essentially replace**  
 13 **RB1, and water is not diverted to RB1 any**  
 14 **longer, and has not been for years.**  
 15 Q. And Ms. Wendling had asked you about all of the  
 16 things that you didn't model with respect to  
 17 drawing water levels down to the proposed new  
 18 low index levels. Is part of the City's  
 19 proposal to draw water levels down to the  
 20 proposed new index levels?  
 21 **A. No.**  
 22 Q. In terms of water levels being pumped down by  
 23 the City and other users to levels below the  
 24 1993 levels, indeed to the proposed lower index  
 25 level, could that happen now under the existing

1 native rights of the City and other users that  
2 have allocations to pump water annually out of  
3 the aquifer?  
4 **A. Yes, they could pump them that low or deeper.**  
5 Q. And really the only thing that we're affecting  
6 with the change in the proposal is whether or  
7 not the City could take credits between the 1993  
8 low limit and the new proposed low limit,  
9 correct?  
10 **A. Correct.**  
11 Q. Any amount of pumping other than credits could  
12 still be taking place on the part of multiple  
13 users, correct?  
14 **A. That is correct.**  
15 **MR. MCLEOD:** I don't have further  
16 questions for the witness on redirect.  
17 **PRESIDING OFFICER:** Mr. Oleen?  
18 **MR. OLEEN:** None by DWR.  
19 **PRESIDING OFFICER:** Mr. Stucky?  
20 **MR. STUCKY:** No further questions.  
21 **PRESIDING OFFICER:** Ms. Wendling?  
22 **MS. WENDLING:** No further questions.  
23 **PRESIDING OFFICER:** This hasn't  
24 happened yet. That being the case,  
25 Mr. McCormick, you're excused. Thank you.

1 obviously need to go back, regroup, and  
2 come back addressing those issues, which  
3 they have not done. And we will renew our  
4 motion to dismiss.  
5 **PRESIDING OFFICER:** Response?  
6 **MR. MCLEOD:** We think that the City  
7 has put adequate information of record, and  
8 we still oppose the motion to dismiss and  
9 also oppose the motion that's stated as a  
10 motion for directed verdict, even though  
11 there's obviously no jury present in this  
12 proceeding.  
13 **PRESIDING OFFICER:** Mr. Oleen?  
14 **MR. OLEEN:** DWR also opposes the  
15 motion for similar reasons that we opposed  
16 the motion to dismiss earlier. I disagree  
17 with counsel for GMD's assertion that the  
18 City needed to prove some of those things  
19 that counsel claims need to be proven. But  
20 even if he is true, there's witnesses of  
21 the DWR that haven't gone yet that may  
22 address some of those items.  
23 Even if those items are not addressed, I  
24 think under the spirit of this type of  
25 administrative proceeding, again, as stated

1 **MR. MCLEOD:** And I would note as  
2 with some of the prior witnesses that we  
3 may also recall him in rebuttal after some  
4 other witnesses have testified.  
5 **PRESIDING OFFICER:** Noted. And,  
6 Mr. McLeod, do you have any other witnesses  
7 to call?  
8 **MR. MCLEOD:** As for the City's case  
9 in chief, we are done.  
10 **PRESIDING OFFICER:** So, Mr. Oleen,  
11 would you like to get started for a little  
12 while before lunch or take an early break?  
13 **MR. OLEEN:** I can get started, Madam  
14 Officer, if I can just have a couple  
15 minutes to clear my space of some of these  
16 books that I was looking through.  
17 **PRESIDING OFFICER:** Certainly.  
18 **MR. ADRIAN:** Madam Hearing Officer,  
19 at this point, the District would ask for a  
20 directed verdict on this matter, and it  
21 would be based upon their failure to  
22 address minimum streamflow, water quality,  
23 effects on other water users, all of those  
24 requirements that they need to meet in its  
25 application that they have not met. They

1 in my opposition to GMD2's previous motion  
2 for summary judgment and motion to dismiss,  
3 that it's not appropriate to end these  
4 proceedings in that procedural way.  
5 **PRESIDING OFFICER:** Ms. Wendling?  
6 **MS. WENDLING:** The Intervenors  
7 support the motion for directed verdict and  
8 motion to dismiss per the grounds stated by  
9 GMD2.  
10 **PRESIDING OFFICER:** In light of the  
11 fact that one of the reasons for this  
12 administrative hearing is for a full  
13 disclosure of facts, for all the parties to  
14 have their say, in effect, for me to have  
15 as much information as absolutely possible,  
16 and to create a complete record for those  
17 who would review this in the future, then  
18 I'm going to deny the motion for directed  
19 verdict. However, as I said at the outset  
20 of the hearing in December, the motion to  
21 dismiss remains pending.  
22 Mr. Oleen.  
23 **MR. OLEEN:** DWR is ready to call its  
24 first witness, Mr. Lane Letourneau. And  
25 I'll have him spell that for you.



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1 LANE LETOURNEAU,  
2 having been first duly sworn, was  
3 examined and testified as follows:  
4  
5 **DIRECT EXAMINATION**  
6 **BY MR. OLEEN:**  
7 Q. Mr. Letourneau, would you please state your name  
8 and spell it for the reporter.  
9 **A. Yes, I am Lane Letourneau, L-A-N-E, and**  
10 **L-E-T-O-U-R-N-E-A-U.**  
11 Q. Mr. Letourneau, with whom are you currently  
12 employed?  
13 **A. The Kansas Department of Agriculture, Division**  
14 **of Water Resources.**  
15 Q. And how long -- and what's your current title  
16 with the DWR?  
17 **A. I am the program manager for the water**  
18 **appropriation program.**  
19 Q. And do you recall how long you've held that  
20 position?  
21 **A. Since 2006 so 13 1/2, 14 years.**  
22 Q. And prior to 2006, did you work for DWR in some  
23 capacity?  
24 **A. I've worked for the Division of Water Resources**  
25 **since 1987.**

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1 **MR. OLEEN:** Permission to approach  
2 the witness, Your Honor?  
3 **PRESIDING OFFICER:** Yes.  
4 **BY MR. OLEEN:**  
5 Q. Mr. Letourneau, I'm handing you what I will ask  
6 the stenographer to mark for identification as  
7 DWR Exhibit 2.  
8 (DWR Exhibit Number 2 Marked for  
9 Identification.)  
10 **MR. OLEEN:** Here's your copy.  
11 **PRESIDING OFFICER:** Thank you.  
12 **BY MR. OLEEN:**  
13 Q. Mr. Letourneau, I just handed you what has been  
14 marked as DWR Exhibit 2, do you recognize that  
15 document?  
16 **A. I do, yes.**  
17 Q. And is this your CV --  
18 **A. Yes.**  
19 Q. -- curriculum vitae or resume?  
20 **A. Correct.**  
21 Q. And you gave a deposition in this matter back  
22 in, what's the date stated on -- well, let me  
23 back up, excuse me. There's a -- there's  
24 another sticker on that document, does it appear  
25 to be a deposition sticker?

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1 **A. Yes.**  
2 Q. And what's the date stated on that deposition  
3 sticker?  
4 **A. March 8, 2019.**  
5 Q. You gave a deposition in the course of these  
6 proceedings at the request of GMD2 and the  
7 Intervenors, correct?  
8 **A. Correct.**  
9 Q. And is that a copy of the CV that you provided  
10 and that was a deposition exhibit at your  
11 deposition?  
12 **A. Yes.**  
13 Q. And this CV, is it generally accurate since it  
14 was used at your deposition, or have there been  
15 significant developments or additions to this?  
16 **A. No -- no additions.**  
17 **MR. OLEEN:** I would move for the  
18 admission of DWR Exhibit Number 2.  
19 **PRESIDING OFFICER:** Any objection?  
20 **MR. STUCKY:** No objection.  
21 **PRESIDING OFFICER:** DWR 2 will be  
22 admitted.  
23 **BY MR. OLEEN:**  
24 Q. Mr. Letourneau, back to your background, do you  
25 have any professional licenses in the State of

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1 Kansas?  
2 **A. I am a professional geologist.**  
3 Q. And you stated that you've worked for DWR in any  
4 capacity for a total of how many years?  
5 Roughly?  
6 **A. 33. 32, 33.**  
7 Q. And most recently, you said that that was in the  
8 position of water appropriation program manager;  
9 is that correct?  
10 **A. That's correct.**  
11 Q. And explain for me your key, main duties, if you  
12 will, as program manager for the water  
13 appropriation program.  
14 **A. Well, the program administers what's called the**  
15 **Kansas Water Appropriation Act. We deal with**  
16 **new applications, new applications to**  
17 **appropriate water, changes to existing water**  
18 **rights, certifying permits -- taking permits,**  
19 **certifying them so they're a water right. We**  
20 **have the annual Water Use Report program, and**  
21 **then we also have compliance and enforcement of**  
22 **permits and water rights. Plus we have our four**  
23 **field offices and one regional office in Parsons**  
24 **that does our fieldwork, so that's what we do.**  
25 Q. And there are other programs within DWR,

1 correct?  
2 **A. Correct.**  
3 Q. Another one is water management services  
4 program; is that correct?  
5 **A. Water management services and then there's the**  
6 **structures program.**  
7 Q. And what does the water management services  
8 program do different from the water  
9 appropriation program of which you are program  
10 manager?  
11 **A. The water management services, I refer to them**  
12 **as our technical team basically, they're the**  
13 **modelers and engineers, they deal with**  
14 **interstate water issues, and then the chief**  
15 **engineer is part of that team.**  
16 Q. Is Chris Beightel the current program manager of  
17 the water struc -- or, excuse me, the water  
18 management services program?  
19 **A. Yes, he is.**  
20 Q. Do you recall at some point in this  
21 consideration of the City's -- City of Wichita,  
22 their proposal, the current chief engineer,  
23 David Barfield, decided to hold this formal  
24 administrative hearing, correct?  
25 **A. Correct.**

1 Q. And given the fact that at the point that the  
2 chief engineer decided to hold an administrative  
3 hearing about this matter and, therefore,  
4 withdraw himself and those on his team from  
5 further discussion with DWR officials, you are  
6 the most senior DWR official left on the, quote,  
7 DWR team about this matter; is that correct?  
8 **A. About this hearing, yes.**  
9 Q. And about the proposal at issue?  
10 **A. Yeah, right now, yeah, I would say yes.**  
11 Q. You weren't personally involved back with the  
12 issuance of the current ASR Phase I and Phase II  
13 orders, were you?  
14 **A. The initial ones, no, I was not part of that**  
15 **program. I mean, I have to say I was aware of**  
16 **them, but I wasn't part of issuing them.**  
17 Q. Do you recall, were you water appropriation  
18 program manager at the time?  
19 **A. No, I was not.**  
20 Q. But you generally have some familiar -- some  
21 familiarity, do you or do you not, with the  
22 Phase I order and the Phase II orders?  
23 **A. Yes, yes, absolutely.**  
24 Q. And what is your understanding of the general  
25 concept of Phase I?

1 Q. And at that point, in order to preserve the  
2 independence of the chief engineer as separated  
3 from other DWR officials, a Chinese wall, if you  
4 will, was erected between DWR and the chief  
5 engineer, correct?  
6 **A. The -- a wall was built between the**  
7 **appropriation program and the majority of water**  
8 **management services. We've -- Ginger Pugh on**  
9 **our -- in water management services has become**  
10 **part of our team, but she's the only technical**  
11 **person that we have on our team.**  
12 Q. Okay. And so the chief engineer was walled off,  
13 and isn't it true that he took Chris Beightel,  
14 the program manager of the water management  
15 services program, he took Chris Beightel on the  
16 chief engineer's team --  
17 **A. Yes.**  
18 Q. -- so to speak?  
19 **A. Correct.**  
20 Q. And so is it true that you are the most senior  
21 DW -- well, let me back up, strike that. As  
22 water appropriation program manager, you have  
23 had some involvement with the City of Wichita's  
24 proposal at issue, correct?  
25 **A. Correct, yes.**

1 **A. Well, what I recall about Phase I was really to**  
2 **get the project going, start testing. A big**  
3 **item in Phase I was the Burrton salt plume and**  
4 **to build -- use recharge credits, then, to build**  
5 **up a hydrologic wall to keep the salt plume from**  
6 **migrating.**  
7 Q. And then what's your general understanding of  
8 the subsequent Phase II?  
9 **A. Phase II at the time, what I remember was**  
10 **recharge credits for water supply.**  
11 Q. Now, as part of these formal administrative  
12 hearing proceedings, you submitted a signed  
13 written testimony on behalf of DWR; is that  
14 correct?  
15 **A. Well, on behalf of the water appropriation**  
16 **program, right.**  
17 **MR. OLEEN:** Permission to approach  
18 the witness?  
19 **PRESIDING OFFICER:** Yes.  
20 **BY MR. OLEEN:**  
21 Q. Mr. Letourneau, I'm going to hand you what I  
22 will ask the stenographer to mark as DWR  
23 Exhibit 3.  
24 (DWR Exhibit Number 3 Marked for  
25 Identification.)

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1 **MR. OLEEN:** Madam Hearing Officer  
 2 and other counsel, I apologize, I don't  
 3 have copies of this document for everyone,  
 4 but this is -- this is DWR's prehearing  
 5 brief and written testimony as it's titled.  
 6 It has already been judicially noticed, so  
 7 to speak, or accepted into the record by  
 8 previous order of Ms. Owen, and so it's  
 9 perhaps not necessary that it be marked and  
 10 admitted as an exhibit to these  
 11 proceedings, but for potential reference, I  
 12 would ask that it be so admitted.  
 13 **PRESIDING OFFICER:** Any objection?  
 14 **MR. STUCKY:** I don't have any  
 15 objection to the exhibit, but there's been  
 16 a concern identified that our exhibits may  
 17 get voluminous. I will note that that  
 18 particular document is already an exhibit  
 19 that the District --  
 20 **MR. OLEEN:** 77, I believe.  
 21 **MR. STUCKY:** Yeah, 77 is an exhibit  
 22 of the District that we intend to reference  
 23 and intend to use. So my suggestion is  
 24 that we just make it the District's  
 25 Exhibit 77.

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1 **MR. OLEEN:** There's -- I understand  
 2 some validity to Mr. Stucky's request, but  
 3 I would prefer DWR's written testimony to  
 4 have a sticker that says DWR on it. That's  
 5 all.  
 6 **PRESIDING OFFICER:** Any other  
 7 comments? I think we'll be able to keep  
 8 clear that it's in two places, if not three  
 9 at once, so I think that's fine, we can  
 10 keep it marked DWR Exhibit 3, then it will  
 11 also be a GMD exhibit.  
 12 **MR. OLEEN:** Thank you.  
 13 **BY MR. OLEEN:**  
 14 Q. So, Mr. Letourneau, looking at what has just  
 15 been admitted as DWR Exhibit 3 --  
 16 **PRESIDING OFFICER:** Pardon me --  
 17 **MR. OLEEN:** Oh, I'm sorry.  
 18 **PRESIDING OFFICER:** -- I have not  
 19 officially admitted it, we just discussed  
 20 about what to call it.  
 21 **MR. OLEEN:** Well, now that we know  
 22 what to call it, I would ask --  
 23 **PRESIDING OFFICER:** Any objections  
 24 to its admission? Hearing none, it's  
 25 admitted.

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1 **MR. OLEEN:** Thank you.  
 2 **BY MR. OLEEN:**  
 3 Q. Mr. Letourneau, what I've handed you as DWR  
 4 Exhibit 3, what's been admitted as that, would  
 5 you please briefly look at that and tell me if  
 6 that is indeed your signature at the end and if  
 7 this appears to be the written testimony that  
 8 you previously submitted.  
 9 **A. It is, yes.**  
 10 Q. So, Mr. Letourneau, we talked about your  
 11 understanding of Phase I of the ASR project, we  
 12 talked about your understanding of Phase II.  
 13 We're obviously here today to talk about the  
 14 City's proposal which would have some  
 15 modifications from the Phase II permit  
 16 conditions as the City states. What's your  
 17 understanding was the catalyst for the proposal  
 18 that we're here today to discuss?  
 19 **A. It's my understanding it's when the City started  
 20 looking at this project and repurposing this  
 21 project from water supply to drought mitigation.  
 22 And that -- that's the genesis of the proposal.**  
 23 Q. And as part of this proposal, is it DWR's  
 24 opinion or characterization that there are two  
 25 kind of key elements of this proposal?

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1 **A. There are two.**  
 2 Q. And how would you characterize those two key  
 3 requests of the proposal?  
 4 **A. The first one is lowering the minimum index cell  
 5 level in Phase II, and the second one is to  
 6 allow aquifer maintenance credits.**  
 7 Q. And you mention element one, lower the current  
 8 minimum index cell levels, have those also  
 9 occasionally been referred to as the, quote,  
 10 1993 bottoms?  
 11 **A. Currently, yes, it's the '93 bottoms.**  
 12 Q. Is it your under -- what is your understanding  
 13 as to whether or not these two aspects of the  
 14 proposal are mutually exclusive or not?  
 15 **A. They are, they are exclusive.**  
 16 Q. And by that, do you mean to say that only one  
 17 could be approved -- only one could be  
 18 recommended by the hearing officer and perhaps  
 19 approved by the chief engineer, or it would have  
 20 to be both or none?  
 21 **A. I'd have to say either could be -- the permits  
 22 could be modified to allow either one, both or  
 23 either one.**  
 24 Q. Okay. So they're not actually mutually  
 25 exclusive in your understanding?

1 **A. Correct.**

2 Q. Regarding the lowering -- the request to lower  
3 the minimum index cell level, do you -- what's  
4 your -- what's DWR's understanding of why the  
5 City's requesting this?  
6 **A. Well, the City is requesting it so they can**  
7 **leave recharge credits in the aquifer longer.**  
8 **When I was approached in the Capitol -- we were**  
9 **making a modification to the multi-year flex**  
10 **account to make it more amenable to our water**  
11 **users to get signed up to become a drought**  
12 **mitigation tool. An unintended consequence of**  
13 **that was we were operating with a lower water**  
14 **table at the time.**

15 **And Dale Goter was a lobbyist for Wichita,**  
16 **Dale was a friend of mine, and Dale approached**  
17 **me and said, look, the City's pretty concerned**  
18 **about the water levels and the impact that's**  
19 **going to happen, so that's when the wheels**  
20 **started turning about the potential for a lower**  
21 **index. So what could potentially happen is the**  
22 **City could build up recharge credits but then**  
23 **the water level would be so low in the aquifer**  
24 **that they would strand those recharge credits**  
25 **and they couldn't access them when they needed**

1 **them.**

2 Q. And so as a result of that concern, is it your  
3 understanding that Wichita eventually did some  
4 drought modeling?

5 **A. I don't -- I think the drought modeling might**  
6 **have been independent of that. I think -- I**  
7 **remember being on a Kansas geological**  
8 **legislative tour and we went to Cheney and Joe**  
9 **Pajor at the time gave a presentation to that**  
10 **group about the operation of Cheney because that**  
11 **group is interested in Cheney, that's when Joe**  
12 **talked about the modeling, the work that they**  
13 **had done. Cheney evaporates faster than they**  
14 **were using it, and so that's why they shifted,**  
15 **then, to the use of Cheney because they didn't**  
16 **want to lose it to evaporation, if I recall that**  
17 **correctly.**

18 Q. And you're aware of the proposal that we're here  
19 to discuss, correct?

20 **A. Absolutely.**

21 Q. And is it your understanding that the City did  
22 some drought modeling that they believe supports  
23 the proposal that they're requesting be adopted;  
24 is that correct?

25 **A. Yes.**

1 Q. Would you please turn in the black notebook, I  
2 believe the very first tab of that black  
3 notebook of the City's -- is the proposal  
4 itself.

5 **A. I'm there.**

6 Q. Does that appear to be --

7 **A. Yes, it's the third tab.**

8 Q. Okay. Well, I would ask you to turn to, in the  
9 proposal, table 2-3 on page 2-5 of the proposal.

10 **A. I'm there.**

11 Q. Okay. And so this table 2-3, you've reviewed  
12 this table 2-3 before; is that correct?

13 **A. Many, many times and this table was one of my**  
14 **talking points --**

15 Q. Okay.

16 **A. -- when I talked to folks.**

17 Q. And what would you talk to folks when you would  
18 explain this table 2-3?

19 **A. The biggest --**

20 Q. As far as what it shows?

21 **A. Okay. The biggest concern that I always heard**  
22 **about was impairment, the City pumping 120,000**  
23 **acre-feet, and so I would refer to the demand on**  
24 **the Equus Beds well field and aquifer storage**  
25 **and recovery, that particular line. And I would**

1 **explain to people that that's the projections of**  
2 **the City, that's what -- that's what they need**  
3 **in the 1 percent drought based on these modeling**  
4 **projections.**

5 Q. And when you say what they need, what are you  
6 referring to?

7 **A. What they need from the well field.**

8 Q. In terms of recharge credits or what?

9 **A. Both, it's native water rights and recharge**  
10 **credits. That's the total need from the well**  
11 **field.**

12 Q. Okay. And you've been sitting here throughout  
13 these proceedings, we're on day four total of  
14 these proceedings; is that right?

15 **A. (Witness nods head affirmatively.)**

16 Q. And so that line item that you referred to, City  
17 demand assigned to EBWF and ASR, were you here  
18 when there was some discussion that that line is  
19 the number of recharge credits and potentially  
20 also native water rights, acre-feet of native  
21 rights to the extent any number in that line is  
22 over 40,000 feet -- 40,000 acre-feet, excuse me?

23 **A. Well, the native rights are 40,000 acre-feet, so**  
24 **anything above 40,000 acre-feet would have to**  
25 **come from recharge credits.**

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1 Q. Okay. And so do you recall, I believe there's  
2 been some discussion, if one does the math, to  
3 determine how many recharge credits would be  
4 used, according to this table, at the end of  
5 drought year five, do you recall roughly what  
6 that number of recharge credits was?  
7 **A. Yeah, it's a little less than 51,000 acre-feet.**  
8 **50,800 or something like that.**  
9 Q. Okay. And so you just -- you just testified  
10 that you had heard concerns about the number  
11 120,000 acre-feet of recharge credits; is that  
12 correct?  
13 **A. Absolutely.**  
14 Q. So are you saying -- what would you tell people,  
15 then, if -- well, let me back up. You said you  
16 would refer to this table in the course of  
17 explaining the City's proposal, right?  
18 **A. Yes.**  
19 Q. And so you just said that according to this  
20 table, something less than 51,000 acre-feet of  
21 recharge credits are anticipated to be used at  
22 the end of drought year eight; is that correct?  
23 **A. Correct.**  
24 Q. So would you explain that to people in relation  
25 to their concerns over 120,000 acre-feet or not?

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1 **A. Yes.**  
2 Q. And how would you explain that?  
3 **A. Because the concern was that I would hear, the**  
4 **City's going to pump their 40, they're going to**  
5 **pump 120, and then even another individual, they**  
6 **said they're going to pump their 19 -- the City**  
7 **today is approved to pump 19,000 of recharge**  
8 **credits if they have that in their account. And**  
9 **they don't have -- they don't have that in their**  
10 **account yet. I think I heard Paul McCormick**  
11 **earlier say they've got about 6,000. So -- but**  
12 **there was a lot of concern about the City**  
13 **pumping their native water rights and 120 and**  
14 **then their recharge.**  
15 **So I would refer to this table to try to**  
16 **actually show what the City's projected demands**  
17 **are. And then at the end, I would say at the**  
18 **end of the 8 percent (sic) drought, it's**  
19 **approximately 51,000 recharge credits if the**  
20 **City accumulated them.**  
21 Q. In the course of coming up with this table 2-3,  
22 the City engaged in -- or hired some people to  
23 perform some modeling work, right?  
24 **A. Correct.**  
25 Q. And you're not a modeler, right?

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1 **A. No.**  
2 Q. I would ask you to turn in -- there's a white  
3 volume underneath the white binder that's open,  
4 I believe.  
5 **A. This one?**  
6 **MR. OLEEN:** Permission to approach  
7 the witness?  
8 **PRESIDING OFFICER:** Uh-huh, yes.  
9 **A. Voila.**  
10 **BY MR. OLEEN:**  
11 Q. Mr. Letourneau, I'll ask that you turn to what  
12 has already previously been marked and admitted  
13 into the record as City's Exhibit 24. And --  
14 **MR. STUCKY:** What was the City's  
15 Exhibit 24?  
16 **MR. OLEEN:** City's Exhibit 24 is a  
17 letter from Chief Engineer Barfield to the  
18 City dated September 18, 2017. And I  
19 actually have other copies I will provide.  
20 **PRESIDING OFFICER:** Thank you.  
21 **MR. OLEEN:** I would ask the  
22 stenographer to please mark this, I believe  
23 we're on DWR Exhibit 4.  
24 (DWR Exhibit Number 4 Marked for  
25 Identification.)

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1 **PRESIDING OFFICER:** Do you have one  
2 for Ms. Wendling?  
3 **MR. OLEEN:** Oh, sorry.  
4 **MS. WENDLING:** Thank you.  
5 **BY MR. OLEEN:**  
6 Q. Mr. Letourneau, if you would please compare DWR  
7 Exhibit 4 with City Exhibit 24, do those appear  
8 to be the same letter?  
9 **A. They're the same letter with the exception of**  
10 **yours being on letterhead.**  
11 Q. Right. And that's why I wanted this one in the  
12 record. I don't know why the other version  
13 doesn't have that, but does this appear to be a  
14 letter -- well, written by whom, who does this  
15 DWR Exhibit 4 appear to be written by?  
16 **A. Well, it was signed by the chief engineer, but**  
17 **it was written by a team of us.**  
18 Q. Okay. And was this letter dated September 18,  
19 2017?  
20 **A. September 18th, 2017, correct.**  
21 Q. And if you just eyeball for a few seconds DWR  
22 Exhibit 4 with City Exhibit 24, do they appear  
23 to be the same document, just one is missing a  
24 letterhead for some reason?  
25 **A. Yes. Yeah.**

1 Q. At the bottom of what has been marked DWR  
2 Exhibit 4, you are a person who was cc'd on this  
3 letter, correct?  
4 **A. I am, correct.**  
5 Q. And you -- do you recall this letter?  
6 **A. Yes.**  
7 **MR. OLEEN:** I would ask for the  
8 admission of DWR Exhibit 4 into the record.  
9 **PRESIDING OFFICER:** Any objection?  
10 DWR 4 will be admitted.  
11 **BY MR. OLEEN:**  
12 Q. Mr. Letourneau, we were talking about modeling  
13 before we started talking about this exhibit,  
14 and you explained that you're not a modeler,  
15 correct?  
16 **A. That's correct.**  
17 Q. But other people with DWR are; is that correct?  
18 **A. That's correct.**  
19 Q. And what's your opinion of the chief engineer's  
20 knowledge of modeling, if you have one?  
21 **A. The chief engineer has a thorough knowledge on**  
22 **how models work based on his experience.**  
23 Q. I would like to direct your attention to the  
24 second page of DWR Exhibit 4, and I'd like you  
25 to read the paragraph that starts with first, as

1 just read back then summarized the chief  
2 engineer's opinion as to the model that the  
3 City's used in this proposal?  
4 **A. Yeah, but I have to add to this mix is Sam**  
5 **Perkins, who has a Ph.D., is a modeler, and also**  
6 **Chris Beightel reviews it, so it's a team of**  
7 **modelers that felt that this was sufficient.**  
8 Q. And would it be fair to say that that was DWR's  
9 official position at that time with respect to  
10 the model that the City's used in their  
11 proposal?  
12 **A. Yes.**  
13 Q. And you're not a modeler, but is this still  
14 DWR's position at this time with respect to the  
15 City's model?  
16 **A. Yes. And then I have to add, we also know that**  
17 **we're -- in talking to the City of Wichita and**  
18 **they asked us the question if it was sufficient;**  
19 **and if this group did not feel it was**  
20 **sufficient, Wichita could afford to do another**  
21 **model, so that's why we felt that it was**  
22 **sufficient.**  
23 Q. So I want to talk more now about this first  
24 aspect of the proposal, which is lowering the  
25 minimum index cell levels. What's your

1 an introductory matter. Do you see where that  
2 is?  
3 **A. I do.**  
4 Q. Would you please read that entire paragraph into  
5 the record.  
6 **A. Entire paragraph. First, as an introductory**  
7 **matter, let me thank the City for its detailed**  
8 **work responsive to my request that the City**  
9 **demonstrate and establish reasonable bottoms to**  
10 **the basin storage area which meet both the needs**  
11 **of the City for the ASR project and assure the**  
12 **public that the ASR can be operated without**  
13 **raising significant water supply concerns from**  
14 **others accessing the aquifer. From our review**  
15 **of the draft report, it appears the City's**  
16 **methods are sufficient for this purpose. While**  
17 **there are no perfect models, we believe the**  
18 **existing model is sufficient for this purpose.**  
19 **It also appears the City's assumptions and data**  
20 **are sufficient as used in this analysis.**  
21 Q. So this letter was sent by the chief engineer  
22 back in 2017 before the initiation of these  
23 formal proceedings; is that correct?  
24 **A. That's correct.**  
25 Q. Is it your understanding that the paragraph you

1 understanding of what the modeling that has been  
2 done by the City and as reported in their  
3 proposal, what's your understanding of what the  
4 City's modeling has showed with respect to the  
5 new proposed minimum index cell levels?  
6 **A. Well, another talking point, two more talking**  
7 **points that I would use, figures 10 and 11, I**  
8 **believe, let me get there. Figures 10 and**  
9 **figures 11, the --**  
10 Q. Of what?  
11 **A. Of the proposal, of the City's proposal.**  
12 Q. Okay. And so what's your understanding of what  
13 figures 10 and 11 show with respect to the  
14 proposal?  
15 **A. It's my understanding that figure 10 shows the**  
16 **conditions of the aquifer after stress period**  
17 **eight, after the eighth year of the drought,**  
18 **I'll say, the period that they ran in that first**  
19 **table.**  
20 Q. The modeled drought simulation?  
21 **A. The model, correct, the model.**  
22 Q. And then what's your understanding of figure 11?  
23 **A. That, I believe, was with the contingencies that**  
24 **they were -- that folks have talked about**  
25 **earlier.**

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1 Q. So is it your understanding that figure 10 shows  
 2 average aquifer condition percent full by index  
 3 cell after the end of the simulated eight-year  
 4 drought with the City model?  
 5 **A. Correct.**  
 6 Q. And is it your understanding that figure 11  
 7 shows something similar but different in that  
 8 it's not after the end of the eight-year-model  
 9 simulated drought but, rather, if the water  
 10 levels actually dropped to the proposed -- all  
 11 the way down to the proposed new bottoms?  
 12 **A. Yeah, this is, I believe, the eight-year drought**  
 13 **with the contingency added on, so these are the**  
 14 **proposed new bottoms.**  
 15 Q. And as part of the program manager for the water  
 16 appropriation program, you -- is it true that  
 17 you head the department in charge of change  
 18 applications, for example?  
 19 **A. Yes.**  
 20 Q. Do you head the department that's in charge of  
 21 processing new permits to appropriate water?  
 22 **A. Yes.**  
 23 Q. As part of those two functions of your program,  
 24 are you required to consider concepts of  
 25 reasonability or impairment under the law, do

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1 you know?  
 2 **A. Yes.**  
 3 Q. And so here do we have any pending change  
 4 applications related to the City's proposal?  
 5 **A. No, these are not -- this is not a change**  
 6 **application.**  
 7 Q. Do we have any pending permits to appropriate  
 8 water --  
 9 **A. No.**  
 10 Q. -- related to the City's proposal at issue?  
 11 **A. No.**  
 12 Q. So is it your opinion that we're not operating  
 13 under your normal procedures to consider and  
 14 approve or deny change applications or new  
 15 permit applications?  
 16 **A. That is correct, but even an existing permit or**  
 17 **water right cannot impair.**  
 18 Q. And so impairment is a concern or an issue that  
 19 DWR has or is considering with respect to this  
 20 proposal; is that true?  
 21 **A. Yes.**  
 22 Q. And has DWR come to an opinion of any kind with  
 23 respect to the potential for impairment and the  
 24 City's proposal that we're here to discuss?  
 25 **A. Yes. By looking at figure 10 at the end of the**

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1 **modeled drought and even with the 10 percent --**  
 2 **or 10-foot, I'm sorry, contingency, IW16 looks**  
 3 **like it's the lowest one and it still has**  
 4 **131 feet of saturated thickness.**  
 5 Q. And so which -- just so we're clear, which  
 6 figure are you referring to, 10 or 11?  
 7 **A. Well, it's figure 11, and IW16 still has**  
 8 **131 feet of saturated thickness based on the**  
 9 **model.**  
 10 Q. So you're referring to a particular index  
 11 cell --  
 12 **A. Right.**  
 13 Q. -- depicted within figure 11?  
 14 **A. Correct.**  
 15 Q. And so -- okay. You said that there's still,  
 16 according to this figure, how much percent of  
 17 aquifer saturated thickness?  
 18 **A. Based on that -- that cell, it's 72 percent**  
 19 **but 131 feet.**  
 20 Q. Okay. And so given the percentage saturated  
 21 thickness of all these index cells, according to  
 22 the modeling as shown on figure 11, did that --  
 23 did that cause or result in some opinion of DWR  
 24 about the prospect of impairment regarding the  
 25 City's request to lower the currently authorized

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1 bottoms of the minimum index cell levels?  
 2 **A. Even lowered, if we get there, there's still**  
 3 **80 percent of the aquifer remaining. I mean,**  
 4 **approximately 80 percent of the aquifer**  
 5 **remaining.**  
 6 Q. So you're saying that you think on average, if  
 7 one were to average all these percentages, are  
 8 you saying you think it's 80 some percent full  
 9 still?  
 10 **A. Just -- just by looking at the numbers. I**  
 11 **haven't done them, but just by roughly looking**  
 12 **at this map, it's roughly 80 percent full.**  
 13 Q. Okay. And if that's correct as you say, then  
 14 did that result in DWR having an opinion on  
 15 whether or not the City's element number one of  
 16 their proposal, i.e., lowering the bottoms,  
 17 what, if anything, does that give DWR to believe  
 18 about the prospect of impairment?  
 19 **A. There's still a lot of aquifer left.**  
 20 Q. Okay. And so --  
 21 **A. So we didn't think it would impair because of**  
 22 **the amount of aquifer that was left.**  
 23 Q. The current bottoms to the minimum index cell  
 24 levels, they're based on water levels from what  
 25 year?

1 **A. 1993.**  
2 Q. And do you recall whether there were -- you were  
3 working for DWR in '93, correct?  
4 **A. Correct, yes.**  
5 Q. Do you recall whether there were impairment  
6 complaints in the area of this well field shown  
7 on figure 11, do you recall whether there were  
8 impairment complaints in 1993 when the water  
9 levels were at the levels that were used to  
10 establish the current minimum index cell level  
11 bottom?  
12 **A. I don't remember any impairment complaints at**  
13 **that time.**  
14 Q. And so I'll ask you to turn to table 2-11, which  
15 is on the preceding page from figure 11 in the  
16 City's proposal.  
17 **PRESIDING OFFICER:** I'm sorry,  
18 Mr. Oleen, I'm going to interrupt you  
19 before we move on. As I -- maybe I heard  
20 this wrong, but I just want to clarify,  
21 when you were first talking with  
22 Mr. Letourneau about figures 10 and 11, I  
23 think I heard you say one thing and him say  
24 another in terms of what figure 11  
25 represents at the end of eight-year

1 Q. Okay. And so you were referring to figure 11  
2 when you were saying that you think that on  
3 average all these index cells total up to  
4 something like 80 some percent; is that right?  
5 **A. Roughly.**  
6 Q. And so it was on that basis that you said what  
7 again about DWR's belief with respect to the  
8 prospect of impairment as a result of lowering  
9 the bottoms?  
10 **A. We don't think impairment will occur based on**  
11 **lowering the bottoms.**  
12 Q. And so then I was -- I would ask you to turn to  
13 table 2-11, which is on the page right before  
14 figure 11, and you can see that middle column in  
15 table 2-11, it says, existing versus proposed.  
16 Do you see that column?  
17 **A. I do.**  
18 Q. Is that column purporting to show a difference  
19 in minimum index cell level elevations from the  
20 current bottoms to the proposed bottoms, is that  
21 your understanding of what that middle column  
22 shows?  
23 **A. Yes.**  
24 Q. And so that middle column is showing a lowering  
25 in terms of feet by each of the index cell

1 drought. Does figure 11 represent at the  
2 end of eight-year drought?  
3 **MR. OLEEN:** Well, I'll try to  
4 clarify that with the witness.  
5 **BY MR. OLEEN:**  
6 Q. So, Mr. Letourneau, if you'll turn to figure 10,  
7 the bottom right-hand corner, does it say end of  
8 simulated drought stress period eight?  
9 **A. Yes.**  
10 Q. So is figure 10, does that show the saturated  
11 thickness at the end of the eight-year simulated  
12 drought that was referred to back on table 2-3?  
13 **A. Yes.**  
14 Q. So figure 11, it's not your understanding that  
15 it shows things at the end of the eight-year  
16 simulated drought, but rather it's showing  
17 saturated thickness all the way down to the  
18 proposed new minimum index cell levels, the  
19 proposed new bottoms; is that correct?  
20 **A. Correct.**  
21 Q. And so is it your understanding that if one  
22 would want to call it a worst-case scenario that  
23 figure 11 is worst-case scenario compared to  
24 figure 10?  
25 **A. Yes, based on this proposal.**

1 levels from the current authorized bottoms to  
2 the proposed, correct?  
3 **A. Correct.**  
4 Q. And so what -- what's the high and low numbers  
5 on that middle column there? Roughly?  
6 **A. Roughly, I see a high of 23.42 feet and a low of**  
7 **9.24 feet.**  
8 Q. Okay. And let's just consider those numbers in  
9 a general sense, does DWR believe that lowering  
10 the current bottoms by this level of feet, if  
11 this proposal is approved or if the request to  
12 lower the bottoms is approved and these -- each  
13 of these minimum index cells are lowered by that  
14 amount, does DWR think that that lowering is  
15 likely to cause impairment?  
16 **A. No, it won't -- we don't think it'll cause**  
17 **impairment.**  
18 Q. Does DWR think that that is a reasonable or an  
19 unreasonable lowering compared to -- well, let  
20 me strike that, let me rephrase. Based on what  
21 Wichita has claimed -- how Wichita's claimed  
22 they will benefit by lowering these bottoms and  
23 be able to access cumulative recharge credits  
24 longer, do you believe that this is an  
25 unreasonable lowering?



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1 **A. It is not unreasonable, but it's also -- retains**  
 2 **the credits longer and not have to use them**  
 3 **because they were stranded based on a higher**  
 4 **water table.**  
 5 Q. If someone -- let me start over. If the  
 6 proposal with its requested new bottoms were to  
 7 be approved and someone were to claim  
 8 impairment, assuming that Wichita did pump water  
 9 that contributed to the water level dropping  
 10 down to at or somewhere close to the new  
 11 proposed bottoms, if someone claimed impairment  
 12 in that regard, is there a mechanism whereby  
 13 that impairment could be investigated and  
 14 addressed within DWR?  
 15 **A. Yes, we -- we've got impairment rules and we do**  
 16 **water rights administration. But in this case,**  
 17 **the City has agreed to anybody impacted, they've**  
 18 **got -- it's written in an MOU right now about**  
 19 **somebody being impacted. They wanted to move**  
 20 **that from what I'll say a nonenforceable MOU to**  
 21 **an enforceable permit condition that even before**  
 22 **someone is impaired, if they're only impacted,**  
 23 **that the City would remedy their water problem.**  
 24 **And so not only do we have the high water table,**  
 25 **we've got the permit condition on the impact, so**

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1 **we -- we felt that it was appropriate to move**  
 2 **forward with this proposal.**  
 3 Q. On that topic, if you would turn to the black  
 4 binder to your extreme right and look at what  
 5 has previously --  
 6 **A. Oh, thank you.**  
 7 Q. -- been marked DWR Exhibit 1.  
 8 **A. Okay.**  
 9 **MR. OLEEN:** And I have some  
 10 additional copies if Madam Hearing Officer  
 11 or other counsel would like copies.  
 12 **PRESIDING OFFICER:** I would, that  
 13 would be great, thank you. Thank you.  
 14 **BY MR. OLEEN:**  
 15 Q. Okay. Mr. Letourneau, do you find that letter  
 16 dated June 1st, 2018 to have previously been  
 17 admitted in this hearing as DWR Exhibit 1?  
 18 **A. Yes.**  
 19 Q. And you were just talking about the City's  
 20 agreement as part of this proposal to allow for  
 21 certain conditions to be imposed that would  
 22 safeguard other water right owners in the area;  
 23 is that correct?  
 24 **A. Correct.**  
 25 Q. And I'll ask you to turn to -- well, first let

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1 me talk a little bit about this letter. This  
 2 letter was also signed by David Barfield,  
 3 correct?  
 4 **A. That's correct.**  
 5 Q. And this letter is sent to whom?  
 6 **A. This letter went to both the Groundwater**  
 7 **Management District No. 2 and to the City of**  
 8 **Wichita.**  
 9 Q. And take some time if you need to peruse this  
 10 letter, but is it true that this letter encloses  
 11 a document that says responses to GMD2  
 12 legal/policy questions and comments? And then  
 13 after that, it has some draft -- it has some  
 14 draft findings and orders regarding the proposal  
 15 before us; is that correct?  
 16 **A. That's correct.**  
 17 Q. Okay. And on one of these findings and orders,  
 18 if you would turn -- go to the first one and  
 19 turn to paragraphs 12 and 13 and review that and  
 20 then let me know when you're done.  
 21 **A. Okay, I'm prepared.**  
 22 Q. Okay. And so is -- what are these paragraphs 12  
 23 and 13 in relation to what you had just  
 24 testified about Wichita's agreement to have  
 25 certain safeguard conditions be imposed if this

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1 proposal were approved?  
 2 **A. They're findings that in order to protect**  
 3 **existing well owners located within 660 feet,**  
 4 **the City has agreed that if the water quality in**  
 5 **an existing domestic well meets current drinking**  
 6 **standards and the quality is changed by the ASR,**  
 7 **then the City will install a home water**  
 8 **treatment system to bring the water back to**  
 9 **drinking water standards.**  
 10 Q. Okay. And, generally, what does -- you don't  
 11 have to recite number 13 below, but if number 12  
 12 addresses water quality, what does proposed  
 13 paragraph 13 address?  
 14 **A. Impact of drawdown.**  
 15 Q. And so what is this proposed set of conditions  
 16 in relation to what you said the City was  
 17 willing to do?  
 18 **A. Well, these would become permit conditions that**  
 19 **would then require the City to protect quality**  
 20 **and quantity.**  
 21 Q. So it's your understanding that as part of the  
 22 proposal -- now, granted, this is a document  
 23 that was drafted by the chief engineer, correct?  
 24 **A. Drafted by us for the chief.**  
 25 Q. Okay. But it's a document that's issued by DWR

1 ultimately, right?  
 2 **A. Correct.**  
 3 Q. But it's your understanding that those -- those  
 4 two draft conditions, proposed draft conditions  
 5 that we talked about, at least in some  
 6 conceptual form the City had agreed to those --  
 7 **A. Yeah.**  
 8 Q. -- as part of the proposal?  
 9 **A. Yeah, absolutely.**  
 10 Q. And turning to your written testimony that has  
 11 been marked as DWR Exhibit 3, at the end of that  
 12 document there is a series of DWR opinions and  
 13 recommendations; is that right?  
 14 **A. That's correct.**  
 15 Q. And I won't make you read all five of them right  
 16 now, but is one of those opinions and  
 17 recommendations that if this proposal is  
 18 approved that there be water quantity and  
 19 quality conditions similar to what was written  
 20 in the draft findings and orders that we looked  
 21 at that's enclosed in DWR Exhibit 1?  
 22 **A. Yes.**  
 23 **MR. OLEEN:** Madam Presiding Officer,  
 24 I am about to go down a new line of  
 25 questioning, I see it's after noon, if you

1 whether it's reasonable or not for the City to  
 2 base this proposal on a 1 percent exceedance  
 3 probability drought?  
 4 **A. No, we don't. We're just thankful that a city  
 5 is planning for a drought.**  
 6 Q. So as far as DWR is concerned, is DWR okay with  
 7 the fact that the City is basing their proposal  
 8 on a 1 percent drought?  
 9 **A. Yes.**  
 10 Q. I want to move on now and talk about -- well,  
 11 first we talked about one of the main two  
 12 aspects of the City's proposal, which is  
 13 lowering the bottoms. The second aspect  
 14 involves this concept of AMCs, correct?  
 15 **A. Correct.**  
 16 Q. In front of you, if you would refer to what has  
 17 been previously admitted DWR Exhibit 1, I  
 18 believe it's the June 1st, 2018 letter, perhaps  
 19 in one of the black binders up there.  
 20 **A. I have it.**  
 21 Q. And, again, this is a letter written June 1,  
 22 2018, signed by David Barfield; is that correct?  
 23 **A. That's correct.**  
 24 Q. Would you please read the first sentence of the  
 25 second paragraph.

1 would think this would be a good time to  
 2 take a break, I'm fine to do that now or I  
 3 can continue.  
 4 **PRESIDING OFFICER:** I think that  
 5 makes a lot of sense. It's 12:20, let's  
 6 meet back at 1:30.  
 7 (Thereupon, a lunch recess was  
 8 taken; whereupon the following was  
 9 had.)  
 10 **PRESIDING OFFICER:** Okay. It's just  
 11 before 1:30, and we are back on the record.  
 12 And, Mr. Oleen, back to you.  
 13 **BY MR. OLEEN:**  
 14 Q. Mr. Letourneau, we're back on the record, and  
 15 you understand that you're still under oath,  
 16 correct?  
 17 **A. Absolutely, yes.**  
 18 Q. Is it correct that DWR views part of its role  
 19 here with respect to this proposal to assess the  
 20 reasonability of it in various aspects?  
 21 **A. Yes.**  
 22 Q. What percentage exceedance probability drought  
 23 is this proposal based on?  
 24 **A. This is a 1 -- a 1 percent drought.**  
 25 Q. And does DWR have a position on whether -- on

1 **A. A more detailed response to your specific  
 2 questions is enclosed with this letter. In  
 3 general, regarding aquifer maintenance credits,  
 4 AMCs, it is the position of myself and the  
 5 Division of Water Resources that AMCs, as  
 6 proposed in this project, constitute a potential  
 7 additional method to accumulate and account for  
 8 recharge credits under the existing authorities.  
 9 Based --**  
 10 Q. Okay, thank you.  
 11 **A. Is that good enough?**  
 12 Q. Thank you, yeah, that's good enough for now.  
 13 You know what, why don't you please go ahead and  
 14 finish that paragraph.  
 15 **A. Based on our ASR regulations and the ability to  
 16 modify Wichita's existing project and accounting  
 17 system, it is our opinion that, with the  
 18 inclusion of proper terms and conditions and  
 19 limitations, an accounting method which creates  
 20 the functional equivalence of aquifer recharge  
 21 could be implemented.**  
 22 Q. And thank you. Now, if you would please read  
 23 the last sentence of the third paragraph, it  
 24 starts with therefore.  
 25 **A. Therefore, as proposed, AMCs appear to be the**

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1 functional equivalent of existing recharge  
 2 credits and serve the public interest by  
 3 maintaining a full -- a fuller aquifer instead  
 4 of requiring Wichita to create additional  
 5 capacity in the aquifer.  
 6 Q. And, finally, please read the sentence on the  
 7 next paragraph, the first sentence that starts  
 8 with ultimately.  
 9 **A. Ultimately, if approved, the proposed changes**  
 10 **would result in a change to the accounting**  
 11 **system of the existing ASR project and not a new**  
 12 **ASR project.**  
 13 Q. And one more sentence.  
 14 **A. AMCs are simply an additional form of recharge**  
 15 **credit.**  
 16 Q. Feel free to take the time to reread to yourself  
 17 those sentences that I've just now asked you to  
 18 recite, but what I want to know is if -- is it  
 19 your understanding that that was DWR's position  
 20 regarding the concept of AMCs at the time this  
 21 June 1st, 2018 letter was issued?  
 22 **A. Yes, that was our position.**  
 23 Q. And now that you've -- well, strike that. Based  
 24 on what you've heard in these proceedings to  
 25 date, is it still DWR's opinion each of those

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1 sentences that you've read regarding AMCs?  
 2 **A. We are still taking in information in this**  
 3 **hearing, but as of what we've heard to this**  
 4 **point, that is still our position.**  
 5 Q. So is it DWR's position that this concept of AMC  
 6 is an accounting concept?  
 7 **A. Correct.**  
 8 Q. Is it DWR's position that an AMC is the  
 9 functional equivalent of a -- of the current  
 10 type of recharge credit that's currently  
 11 authorized?  
 12 **A. That's correct.**  
 13 Q. And that current type involves -- or is created  
 14 by the physical injection of water, correct?  
 15 **A. That is correct.**  
 16 Q. So do you sometimes, have you heard those  
 17 referred to as physical recharge credits to  
 18 distinguish them from this new proposed concept  
 19 of AMC?  
 20 **A. That's correct.**  
 21 Q. Does DWR have an opinion on whether this AMC  
 22 part of Wichita's proposal is a good idea or  
 23 not?  
 24 **A. Well, we feel it is because it is not requiring**  
 25 **the City to create what I'll call the hole to**

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1 make it -- to where physical recharge credits  
 2 can be put into the aquifer.  
 3 Q. And why do you think -- why did DWR think that  
 4 it's good not to create that hole?  
 5 **A. Well, we're operating with a fuller aquifer,**  
 6 **we're -- we're operating with fuller aquifer**  
 7 **conditions.**  
 8 Q. And that's good because why?  
 9 **A. Well, it just seems to be good management.**  
 10 Q. Do you think it's a more efficient way of  
 11 managing the aquifer and the ASR project?  
 12 **A. It's a more efficient way to manage the aquifer**  
 13 **for everybody in the aquifer actually.**  
 14 Q. Do you believe it rises to the level of being in  
 15 the public's interest?  
 16 **A. Put it in -- going into a 1 percent drought with**  
 17 **the aquifer full is in the public interest.**  
 18 Q. You've heard some testimony or mention about  
 19 this concept of passive recharge credits,  
 20 correct?  
 21 **A. Correct.**  
 22 Q. And what's your understanding of where that term  
 23 came about? Let me back up, sorry. First, as  
 24 part of the Phase II approval, is that where  
 25 that concept originated from, do you know?

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1 **A. Well, the concept originated a long time ago,**  
 2 **you know, I don't know exactly when, but I'm --**  
 3 **I remember terms like of in lieu of credits from**  
 4 **Dave Stous that worked at Burns & McDonnell, I**  
 5 **remember passive recharge credits. Operational**  
 6 **credits were another term that was used. But**  
 7 **what I remember was that was for getting credit**  
 8 **for using Cheney in lieu of the well field.**  
 9 Q. And using Cheney in lieu of the well field, was  
 10 that something that has been proposed by Wichita  
 11 before?  
 12 **A. Yes.**  
 13 Q. And do you remember when that was and under what  
 14 context?  
 15 **A. I don't remember exactly when. I mean, it was**  
 16 **under the context of talking about ASR.**  
 17 Q. Currently, quote, passive recharge credits, are  
 18 they or are they not prohibited under existing  
 19 ASR orders --  
 20 **A. They are --**  
 21 Q. -- of DWR?  
 22 **A. They are prohibited and we agree with that.**  
 23 Q. Does DWR agree that the concept of AMCs as  
 24 proposed by the City amounts to passive recharge  
 25 credits?

1 **A. They do not, in our opinion.**  
2 Q. Would you please turn to the letter that this  
3 morning we marked as DWR Exhibit 4.  
4 **A. I have it.**  
5 Q. Okay. And we talked about the back story of  
6 when this letter was issued and who issued it,  
7 so would you please read the entire paragraph  
8 number 2.  
9 **A. Aquifer maintenance credits, AMCs, are not**  
10 **passive recharge credits. In his order dated**  
11 **August 8th of 2005 related to the ASR project,**  
12 **David Pope specifically concluded it was**  
13 **inappropriate to allow for passive recharge**  
14 **credits. DWR does not believe AMCs as**  
15 **envisioned are passive recharge credits, the**  
16 **distinction being that the City's proposed AMC**  
17 **recharge credits will pass through the ASR**  
18 **diversion and treatment infrastructure and are**  
19 **subject to the rate and quantity limitations of**  
20 **the permits.**  
21 Q. Thank you. At the time that this letter was  
22 issued, was that DWR's opinion regarding whether  
23 proposed AMCs amount to the prohibited passive  
24 recharge credits?  
25 **A. Yes, that's our position.**

1 **aquifer, then it will be physically recharged;**  
2 **if no room in the aquifer, then it's taken to**  
3 **town, but the AMC then is accumulated.**  
4 Q. And so just to be clear, DWR is not advocating  
5 that passive recharge credits no longer be  
6 prohibited, DWR just doesn't think that AMCs  
7 amount to passive recharge credits; is that  
8 accurate?  
9 **A. That's accurate.**  
10 Q. On the issue of AMCs, if you could refer to what  
11 has previously been marked as DWR Exhibit 1, the  
12 June 1st, 2018 letter, do you have that up  
13 there?  
14 **A. I do.**  
15 Q. We mentioned before that one of the enclosures  
16 to this letter is titled Responses to GMD2  
17 Legal/Policy Questions and Comments, do you see  
18 that there?  
19 **A. Yes.**  
20 Q. Now, you're not an attorney, are you,  
21 Mr. Letourneau?  
22 **A. No.**  
23 Q. Do you know what the process was as far as how  
24 this document was created that's titled  
25 Responses to GMD2 Legal/Policy Questions and

1 Q. And now that you and -- now that we've gone  
2 through these hearing proceedings, has DWR's  
3 opinion changed, or is this still DWR's opinion  
4 on this issue?  
5 **A. Well, while we're still taking in information to**  
6 **this point, that is still our position.**  
7 Q. And can you explain to me why DWR believes that  
8 the type of recharge credit that was proposed in  
9 the past and that was ultimately prohibited and  
10 called a passive recharge credit, can you  
11 explain to me how that concept in DWR's opinion  
12 differs from the concept that Wichita is  
13 proposing here as to AMCs?  
14 **A. The source, it -- in my mind, it starts with the**  
15 **source of water. Cheney is a different source,**  
16 **not taken -- not diverted at the Little Ark**  
17 **intake, not treated at the ASR treatment**  
18 **facility. And so when we looked at AMCs as a**  
19 **functional equivalent, it is diverted -- it**  
20 **starts out just like a recharge credit today, it**  
21 **has -- the water has to be available in the**  
22 **Little Ark, diverted at that point, taken to the**  
23 **treatment facility, treated, and then it goes to**  
24 **a point of is there room in the aquifer or not**  
25 **room in the aquifer? Is there room in the**

1 Comments?  
2 **A. Yeah, our team reviewed it and put these**  
3 **responses together.**  
4 Q. But was this something that you drafted, or was  
5 this something that was drafted by DWR counsel  
6 at the time?  
7 **A. DWR counsel, I believe, Robert Large.**  
8 Q. As far as you know, are the arguments in here on  
9 this -- or the responses on this document still  
10 DWR's position with respect to the issues  
11 discussed in here?  
12 **A. Yes.**  
13 Q. Does DWR view the concept of AMCs as resulting  
14 in a new appropriation of water?  
15 **A. They are not a new appropriation.**  
16 Q. And why do you think that? Or how would you  
17 explain why DWR doesn't think that they're a new  
18 appropriation of water?  
19 **A. They're a recharge credit.**  
20 Q. So it's DWR's position that -- well, let me back  
21 up. The current ASR permits, are they perfected  
22 yet?  
23 **A. No.**  
24 Q. And is it those permits that -- is it those  
25 existing permits that are authorized to generate

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1 AMCs? Or recharge credits of any kind, rather?  
 2 **A. They can generate recharge credits but not AMCs**  
 3 **until this proposal goes through.**  
 4 Q. And, currently, is there a cap on the number of  
 5 recharge credits of any kind that Wichita can  
 6 accumulate under existing ASR conditions?  
 7 **A. No.**  
 8 Q. And is there a current limit, though, on how  
 9 many recharge credits Wichita can withdraw in  
 10 any given year?  
 11 **A. I believe it's -- well, it's twofold. It's**  
 12 **19 -- they're authorized to divert 19,000**  
 13 **acre-feet, but that's once they have credit for**  
 14 **them.**  
 15 Q. So assuming the City ever got to the point of  
 16 accumulating 19,000 acre-feet of recharge  
 17 credits, under existing permit conditions, they  
 18 could withdraw that if they have them available?  
 19 **A. Yes.**  
 20 **PRESIDING OFFICER:** I'm sorry, I  
 21 need to make sure I understand your answer.  
 22 So you're saying there's a limit of 19,000  
 23 acre-feet per year of recharge credits the  
 24 City could recover?  
 25 **A. If they had them.**

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1 **PRESIDING OFFICER:** If they have  
 2 them.  
 3 **A. Correct.**  
 4 **PRESIDING OFFICER:** Okay. But there  
 5 is that --  
 6 **A. Yeah.**  
 7 **PRESIDING OFFICER:** -- that maximum?  
 8 Thank you.  
 9 **BY MR. OLEEN:**  
 10 Q. So to be clear, Mr. Letourneau, there's  
 11 currently -- well, you tell me if this is  
 12 correct. There's no limit currently on the  
 13 number of recharge credits that can be  
 14 accumulated, but there is a limit on the number  
 15 of recharge credits that currently can be  
 16 withdrawn?  
 17 **A. Yes.**  
 18 Q. Mr. Letourneau, if you'd turn to your written  
 19 testimony that's been marked and admitted as DWR  
 20 Exhibit 3.  
 21 **A. Okay, I have it.**  
 22 Q. I believe so. Oh, you do have it?  
 23 **A. I do have it, I'm sorry, I have it.**  
 24 Q. If you turn to page 7. So I understand that  
 25 this hearing -- these hearing proceedings are

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1 not yet concluded, but is it DWR's opinion that  
 2 both aspects of Wichita's proposal, both  
 3 lowering the bottoms and allowing for this  
 4 accounting concept of AMCs, are reasonable and  
 5 in the public interest?  
 6 **A. Yes.**  
 7 Q. But you have stated that DWR has certain permit  
 8 conditions that DWR thinks should be imposed in  
 9 the event that the proposal is approved; is that  
 10 correct?  
 11 **A. Yes.**  
 12 Q. And can you briefly explain for me what those  
 13 current recommendations are that you have in the  
 14 numbers list on page 7?  
 15 **A. Well, because it's in the proposal, we thought**  
 16 **we could condition the -- the proposal for a**  
 17 **maximum accumulation of all recharge credits to**  
 18 **120,000 acre-feet.**  
 19 Q. So DWR is -- essentially agrees with the City,  
 20 the City's willing to impose that limitation,  
 21 and DWR thinks that that limitation should be  
 22 imposed on the accumulation of any type of  
 23 recharge credit?  
 24 **A. That would be fine, yep, that's good.**  
 25 Q. Okay. And number 2, what was the second

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1 recommendation of DWR?  
 2 **A. Conditions that adequately ensure that native**  
 3 **rights in the area are protected from any**  
 4 **impairment that may result, such as conditions**  
 5 **that require Wichita to use pumping rotation and**  
 6 **timing if conflicts occur, and that adequately**  
 7 **protect the current domestic use in the well**  
 8 **field.**  
 9 Q. That last clause, that adequately protect the  
 10 current domestic use in the well field, does  
 11 that refer to the draft permit conditions, I  
 12 believe it's numbers 12 and 13, that we talked  
 13 about this morning, that address water quality  
 14 and quantity -- or, yes, I believe water quality  
 15 and quantity that would be imposed on Wichita if  
 16 their proposal were to be approved?  
 17 **A. Yes.**  
 18 Q. Okay. And how about numbers 3 and 4 that are in  
 19 the list here?  
 20 **A. Number 3, we had a lot of questions about the**  
 21 **priority of pumping, and if the bottoms get**  
 22 **lowered, then we felt it would be appropriate**  
 23 **for the City to use their native water rights**  
 24 **first because those renew every year, and with**  
 25 **the lowering, then, it wouldn't strand any of**

1 **the recharge credits. And so we would, working**  
 2 **it out with the City, would pump the native**  
 3 **first and then the recharge second.**  
 4 Q. And those native water rights, I think we  
 5 referred to those before, is that the 40,000  
 6 acre-feet of water that the City has --  
 7 **A. Yes.**  
 8 Q. -- in the well field?  
 9 **A. Yes. To clear that up, the native water rights**  
 10 **authorize 40,000 acre-feet.**  
 11 Q. And is that 40,000 acre-feet, is that, quote,  
 12 ASR water?  
 13 **A. No, no, the 40,000 is the City's water rights**  
 14 **for municipal use in the -- in the Equus Beds**  
 15 **well field.**  
 16 Q. Is it your understanding that the City's  
 17 proposal provides that they would, in the event  
 18 of a drought, that they would pump their native  
 19 water rights before withdrawing any accumulated  
 20 recharge credits?  
 21 **A. If -- if -- it's my understanding if this**  
 22 **proposal is approved in lowering the bottom,**  
 23 **then it wouldn't strand, I'll say, the recharge**  
 24 **credits in the aquifer. So it -- it benefits**  
 25 **the City to use their native water rights**

1 **overall umbrella, the 19,000 would be limited to**  
 2 **the overall umbrella, so it's no additional**  
 3 **water to their suite of water rights.**  
 4 **PRESIDING OFFICER:** From all of the  
 5 sources?  
 6 **A. From all of the sources. And with this -- when**  
 7 **I'm going through these conditions, these have**  
 8 **not been vetted with the City at all yet so ...**  
 9 **BY MR. OLEEN:**  
 10 Q. Is that partly because -- is that partly because  
 11 the chief engineer decided to hold these  
 12 administrative proceedings, and that kind of  
 13 interrupted the discussion that was going on at  
 14 that time?  
 15 **A. Yes, absolutely.**  
 16 Q. But is DWR still, you and DWR still listening to  
 17 these proceedings, taking in information, and  
 18 are you willing to submit revised  
 19 recommendations if you determine it's necessary  
 20 after the end of these proceedings?  
 21 **A. Yeah, absolutely.**  
 22 **MR. OLEEN:** No further questions.  
 23 **PRESIDING OFFICER:** Mr. McLeod, do  
 24 you have any cross?  
 25 //

1 **because they renew every year. Plus in the**  
 2 **modeling, I believe the 40,000 is pumped every**  
 3 **year to accommodate -- and that's what showed**  
 4 **those water levels in that figure 11. So I**  
 5 **think we're counting on the 40,000, or some of**  
 6 **the 40,000 to be pumped, if not all of it.**  
 7 Q. And how about number 4 on your list?  
 8 **A. Yeah, conditions that limit the usage of**  
 9 **accumulated recharge credits to Wichita's**  
 10 **overall authorized quantity. Because we'd heard**  
 11 **from folks that Wichita wants to use this to**  
 12 **bring on more customers, but the City was --**  
 13 **told us, no, it was just to get them through a**  
 14 **drought. So the use of the 19,000 acre-feet of**  
 15 **recharge credits would be limited to the City's**  
 16 **overall quantity, so there wouldn't be a net**  
 17 **growth of 19,000 acre-feet, if that makes sense.**  
 18 **There would be -- it would be included in**  
 19 **their suite of -- limited to their current suite**  
 20 **of water rights.**  
 21 **PRESIDING OFFICER:** So if I  
 22 understand that correctly, they're still  
 23 limited to 40,000 acre-feet?  
 24 **A. Well, they're limited to 40,000, plus Cheney,**  
 25 **plus the other well field and Bentley. So their**

1 **CROSS-EXAMINATION**  
 2 **BY MR. MCLEOD:**  
 3 Q. Mr. Letourneau, you had indicated that a purpose  
 4 of the lower bottoms that we proposed, lower  
 5 index levels, was to permit the City to wait  
 6 longer to draw its recharge credits, leaving  
 7 that water in the aquifer farther into a  
 8 drought, for example. Who does it help if the  
 9 City is forced to draw those credits out  
 10 earlier?  
 11 **A. It doesn't help anyone.**  
 12 Q. And how is it in any way bad if the City is  
 13 enabled to leave the recharge credits in the  
 14 aquifer longer?  
 15 **A. I don't -- I don't see a bad at all.**  
 16 Q. Do you think that that's one of the aspects of  
 17 the City's proposed modifications that would be  
 18 in the public interest, lowering the bottoms to  
 19 enable the City to leave those credits in the  
 20 aquifer longer?  
 21 **A. Yes.**  
 22 Q. You had mentioned in your testimony recollection  
 23 of past conversations with Dale Goter and Joe  
 24 Pajor that the City during the 2011 and 2012  
 25 drought was having evaporative problems with

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1 Cheney. And I think you also indicated further  
2 that the rate of evaporation in Cheney was  
3 providing the City an incentive to take water  
4 from Cheney, as much as it could, in order to  
5 not lose that water to evaporation. Do you  
6 think that that same problem would surface in  
7 any drought?  
8 **A. Yes, absolutely.**  
9 Q. And to that extent, in any drought conditions,  
10 whether or not the City had some massive credits  
11 in the aquifer, the City would have that same  
12 incentive to draw from Cheney as heavily as it  
13 could to erase evaporation, correct?  
14 **A. Absolutely.**  
15 Q. I know you've been here through much, if not  
16 all, of the hearings, have you been here through  
17 all of the hearings?  
18 **A. Yes.**  
19 Q. And you probably noticed the recurrent theme of  
20 both the District and the Intervenor that they  
21 suggest that the City's demand to 2060 has been  
22 over-projected. If that were true,  
23 Mr. Letourneau, and the City's demand of 2060 is  
24 over-projected, would the result of that not  
25 then be simply that the City would not need the

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1 demand that we have currently projected in table  
2 2-3 and might be able to get through the drought  
3 taking lesser credits than we've projected?  
4 **A. Yes, that's correct.**  
5 Q. And how would that in any way be bad?  
6 **A. I -- I don't see it being bad.**  
7 Q. If the City is -- has over-projected its demand  
8 and we end up with -- we end up then with more  
9 water in the aquifer than we had thought,  
10 correct?  
11 **A. Correct.**  
12 Q. Just as a clarification, because you used the  
13 title in one of your answers, you had said that  
14 the chief engineer has a thorough experiential  
15 knowledge of how models work. And by that, did  
16 you mean the current chief engineer, David  
17 Barfield?  
18 **A. Yes.**  
19 Q. Mr. Letourneau, in some of your testimony,  
20 you've used the term functional equivalent in  
21 referring to the AMCs, and I'd like to have you  
22 explain what you mean by saying that the AMCs  
23 would be functional equivalents of the physical  
24 recharge credits.  
25 **A. Everything's the same except for the space in**

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1 **the aquifer. The water has to be available from**  
2 **the Little Ark, it has to be diverted at the**  
3 **diversion point in the Little Ark, it has to go**  
4 **to the ASR treatment facility and be treated,**  
5 **and it's after that point is -- the decision is**  
6 **made whether to put it in the aquifer or take it**  
7 **into town. And that decision is just based on**  
8 **whether there's space in the aquifer or not. So**  
9 **it is the -- to us, it's the equivalent from the**  
10 **start until it gets to the point of the decision**  
11 **if there's space in the aquifer or not.**  
12 Q. If the City under current permit conditions made  
13 the hole in the aquifer by pumping the aquifer  
14 down and then injected recharge to bring the  
15 aquifer back up, how does that -- how does that  
16 end result compare to the end result of allowing  
17 the AMCs and not requiring the City to lower the  
18 aquifer?  
19 **A. Well, it -- it -- simple way to look at it, it's**  
20 **not requiring the City to pump a gallon to**  
21 **replace it with a gallon. Did that answer your**  
22 **question?**  
23 Q. So at the end of both scenarios, then, the state  
24 of the aquifer is the same, but in the AMC  
25 instance, you haven't required the City to make

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1 the hole in order to refill the hole?  
2 **A. That's correct.**  
3 Q. And, Mr. Letourneau, how can that be bad for  
4 anyone?  
5 **A. It -- it's not bad.**  
6 Q. Both in Mr. Oleen's questioning and in your  
7 answers, I know you're reserving a caveat that  
8 you have not yet heard all of the information  
9 produced and to be produced as yet in this  
10 hearing. I want to ask you about a specific  
11 item, you know that Mr. Pope, the former chief  
12 engineer, has generated and submitted an expert  
13 report in this proceeding, correct?  
14 **A. Correct.**  
15 Q. And I believe it is already among the materials  
16 posted on the DWR website.  
17 **A. That's correct.**  
18 Q. Have you reviewed that report by Mr. Pope?  
19 **A. Yes.**  
20 Q. And so it is part of the information that you  
21 have looked at, that you have already gathered  
22 up to this point in the hearing?  
23 **A. Correct.**  
24 Q. With respect to the annual limit on withdrawal  
25 of credits that you've referred to, the 19,000

1 acre-feet that the City can't exceed in a year,  
2 even if it has the credits, does the proposal,  
3 does it suggest any change to that 19,000  
4 acre-foot annual limit?  
5 **A. No.**  
6 Q. And if the City subsequently wanted to make a  
7 change to that 19,000 acre-foot limit, what  
8 procedure would the City need to follow to do  
9 that?  
10 **A. It would take authority, additional authority --**  
11 **well, it's authority to pump recharge credits**  
12 **over and above the 19,000, so it would require a**  
13 **new application and an approval of a permit to**  
14 **proceed.**  
15 Q. And so at that point, in order to make that  
16 change, the City would have to come back to the  
17 DWR, go through the new application process, and  
18 consider all of the factors, public interest,  
19 non-impairment of other users, that you would  
20 consider in any new application process?  
21 **A. Absolutely.**  
22 **MR. MCLEOD:** I don't have further  
23 questions for the witness.  
24 **PRESIDING OFFICER:** Mr. Stucky.  
25 **A. The sun is right behind you, so forgive me if I**

1 **take them so ...**  
2 Q. Did you have the occasion when you were, I think  
3 it was at Fort Hays; is that correct?  
4 **A. That's correct.**  
5 Q. Did you study any kind of water regulations  
6 while you were at Fort Hays?  
7 **A. No.**  
8 Q. So your knowledge of studying water regulations  
9 and statutes, that would be based on your last  
10 13 1/2 years of experience, correct?  
11 **A. Well, 33 roughly. I mean, I worked in new**  
12 **applications starting out, which we used, you**  
13 **know, the statutes and rules and regs, so my**  
14 **whole career with the Division of Water**  
15 **Resources we'd be working with rules and regs.**  
16 Q. So for 33 years, you've analyzed the rules and  
17 regulations germane to water law and germane to  
18 water rights; is that correct?  
19 **A. I don't know about analyzed, I mean, I -- I**  
20 **would have referred to them as I was processing.**  
21 Q. In other words, you would have applied --  
22 **A. Correct.**  
23 Q. Okay. So for 33 years, you have looked at the  
24 statutes and regulations and tried to apply them  
25 to applications and water rights that would fall

1 **can't see you. Thank you, Tim.**  
2  
3 **CROSS-EXAMINATION**  
4 **BY MR. STUCKY:**  
5 Q. All right. Mr. Letourneau, just a moment ago,  
6 you testified that I think you've been in your  
7 current role for 13 1/2 years. Is that what you  
8 testified to?  
9 **A. Yes. Yes.**  
10 Q. So what year was it, then, that you started your  
11 current role?  
12 **A. I believe 2006.**  
13 Q. And I didn't catch earlier in your testimony,  
14 what education do you have in -- to help you in  
15 your current role?  
16 **A. I've got a bachelor of science in geology.**  
17 Q. And based on your bachelor of science in  
18 geology, did that prepare you to do any kind of  
19 modeling work or things of that nature?  
20 **A. No.**  
21 Q. Based on your bachelor degree in geology, were  
22 there courses in hydrology?  
23 **A. Yes.**  
24 Q. Were there courses in hydrogeology?  
25 **A. No. If they were available, David, I didn't**

1 before you; is that correct?  
2 **A. That's correct.**  
3 Q. And in doing so, I assume that over the course  
4 of your career, you've also been involved in  
5 changes to these regulations and changes to the  
6 statutes governing water rights?  
7 **A. Yes.**  
8 Q. And, in fact, I assume that at least at some  
9 point in your career, you've testified before  
10 the legislature regarding a perceived regulation  
11 change or a proposed statute change?  
12 **A. Yes.**  
13 Q. And, in fact, because of your knowledge of the  
14 statutes and regulations germane to water  
15 rights, you were perceived as a viable witness,  
16 if you will, in the legislature to testify in  
17 that regard; is that true?  
18 **A. Yes.**  
19 Q. You indicated in your testimony a moment ago  
20 that over the course of your career, you've  
21 analyzed changes to water rights, you've looked  
22 at new applications, you've an -- you've  
23 analyzed annual reports, as well as considering  
24 enforcement. Is that a true statement?  
25 **A. Yes.**



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1 Q. In what other ways would you have applied the  
 2 statutes and regulations to water rights or  
 3 water applications?  
 4 **A. I don't know of what else I would have done.**  
 5 **That's our -- that's our core mission work, so**  
 6 **I'm not -- I'm not aware of any more.**  
 7 Q. From an enforcement standpoint, if a application  
 8 comes before you or a water right comes before  
 9 you that you perceive as being out of  
 10 compliance, what do you generally do from an  
 11 enforcement standpoint?  
 12 **A. Depending on the violation, we -- we may issue a**  
 13 **warning, or depending on the level of violation,**  
 14 **we will issue an order under the Water**  
 15 **Appropriation Act and issue a civil penalty.**  
 16 Q. And as you do so, how do you determine whether a  
 17 water right holder is in violation of the  
 18 statutes and regulations?  
 19 **A. There's terms, conditions, and limitations on**  
 20 **every permit of water right, and so if someone**  
 21 **is outside of those terms, conditions, and**  
 22 **limitations, then they're considered out of**  
 23 **compliance.**  
 24 Q. So you would analyze the water right and the  
 25 conditions on the face of that water right, and

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1 then would you compare it to the existing  
 2 statutes and regulations that govern it?  
 3 **A. Yes.**  
 4 Q. And if you decided that either, A, the water  
 5 right holder is in violation of their own  
 6 internal terms and conditions in their water  
 7 right or, B, on the other hand, on the face is  
 8 in violation of a statute or regulation, you  
 9 would determine that the water right was out of  
 10 compliance; is that true?  
 11 **A. Yes.**  
 12 Q. And if you determined that the water right was  
 13 out of compliance, then you would take an  
 14 enforcement action; is that right?  
 15 **A. Warning -- yeah, in this case, a warning is**  
 16 **enforcement action, so, yes, there would be**  
 17 **enforcement action.**  
 18 Q. Is one potential, and I know that the Division  
 19 of Water Resources generally has a stairstep  
 20 approach, if you will, with regard to  
 21 enforcement. Is that a true statement  
 22 generally?  
 23 **A. Yes, generally.**  
 24 Q. At some point in that stairstep approach, is it  
 25 true that the Division of Water Resources can

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1 suspend or stop the use of the water right?  
 2 **A. We -- yes, we have suspension authority.**  
 3 Q. With respect to your enforcement powers, what is  
 4 the most draconian nature of your powers?  
 5 **A. I don't think we have draconian power.**  
 6 Q. Well, let me ask it this way: What's the  
 7 harshest penalty that you can impose on a water  
 8 right owner?  
 9 **A. Suspension of water use.**  
 10 Q. Do you have the ability to cause a water right  
 11 to cease to exist?  
 12 **A. No, we -- we do not have revocation authority,**  
 13 **but we do have suspension authority.**  
 14 Q. Do you know if in your time, have you ever  
 15 recommended or asked a water right holder to  
 16 voluntarily relinquish their water right, or  
 17 have you ever asked for that?  
 18 **A. We -- we have not initiated someone to**  
 19 **relinquish their water right, but water right**  
 20 **holders will sign a form and relinquish their**  
 21 **water right.**  
 22 Q. But what your testimony is is that you've never  
 23 forced anyone to relinquish a water right?  
 24 **A. No, not that I'm aware of.**  
 25 Q. In addition to the training that you've received

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1 on the job by looking at water right  
 2 applications and looking at existing water  
 3 rights, what additional training have you done  
 4 to help qualify you to analyze water rights? In  
 5 other words, in the legal profession, if  
 6 Mr. Adrian wants further training he'll go to  
 7 what are called CLEs to get additional training.  
 8 My question is is there outside training that  
 9 you generally do in your job to --  
 10 **A. Well, to maintain a geology license, we've got**  
 11 **something equivalent of a CLE, I can't remember**  
 12 **exactly what they're called. You know, we go**  
 13 **to -- it's mostly, oh, conferences and things,**  
 14 **to get our hours, we call them, but I haven't**  
 15 **done any other -- I've not taken any additional**  
 16 **school or done training.**  
 17 Q. Have you maintained your geology license?  
 18 **A. I have.**  
 19 Q. So you have continued with those ongoing  
 20 trainings --  
 21 **A. Yes.**  
 22 Q. -- to maintain your license?  
 23 **A. Yes.**  
 24 Q. And, Mr. Letourneau, just one thing I'm going to  
 25 respectfully ask, as we start this, if you could

1 wait till my question is finished before you  
2 answer so we can create a clear record, I'd ask  
3 that you do that.  
4 **A. I'm very sorry, I will.**  
5 **MR. OLEEN:** Sorry, Mr. Stucky, would  
6 it help, and it might help for me too if  
7 that mic could be raised?  
8 **A. It -- it won't stay. I'll figure it out. Thank**  
9 **you.**  
10 **MR. OLEEN:** May I approach and  
11 readjust that, Madam Officer?  
12 **A. Well, we tried, Aaron.**  
13 **MR. STUCKY:** It won't?  
14 **A. Right.**  
15 **PRESIDING OFFICER:** Yeah, I don't  
16 think -- just put it farther back under the  
17 boom.  
18 **A. And I apologize for interrupting. Okay, I'll do**  
19 **better.**  
20 **BY MR. STUCKY:**  
21 Q. No, it's no worries. And I certainly was not  
22 trying to scold you by any means. When you're a  
23 friend or an acquaintance with someone,  
24 generally you can finish sentences for the  
25 person, but because this is a hearing, we have

1 **PRESIDING OFFICER:** Yes. Which  
2 volume?  
3 **MR. STUCKY:** Oh, I'm sorry, Volume  
4 1, Exhibit 20.  
5 **BY MR. STUCKY:**  
6 Q. Mr. Letourneau, I'd asked that you flip to  
7 Exhibit 20 in Volume I of the District's  
8 exhibits, and you're on that exhibit now; is  
9 that correct?  
10 **A. That's correct.**  
11 Q. Do you recognize that particular exhibit as  
12 your -- a transcript of your deposition  
13 testimony?  
14 **A. Yes.**  
15 Q. And would you agree that you had an opportunity  
16 to review and sign that deposition transcript?  
17 **A. Yes.**  
18 Q. And so at least as you're sitting here today, do  
19 you agree that that deposition transcript  
20 represents what you would have said during that  
21 deposition?  
22 **A. Yes.**  
23 Q. And as you're sitting here today, are you aware  
24 in any regard how your testimony today would be  
25 different than what's in your deposition

1 to create a clear record.  
2 So other than your outside training to  
3 maintain your geology license, would the bulk of  
4 your training and experience be based on your  
5 33 years while working for the Division of Water  
6 Resources?  
7 **A. Yes.**  
8 Q. You indicated that prior to your current role  
9 you had the occasion to look at water right  
10 applications prior to your current role, tell me  
11 what that role was and why you would have looked  
12 at applications.  
13 **A. When I was first hired with the Division of**  
14 **Water Resources, I was a hydrologist I and hired**  
15 **on to review new applications. And then soon**  
16 **after that, though, in a couple months, I was**  
17 **reviewing new applications and changes.**  
18 Q. So trying to determine permit conditions for  
19 water rights or trying to decide whether a water  
20 right should be approved, for example, that's  
21 within your bailiwick; is that true?  
22 **A. Yes.**  
23 Q. There's a -- should be an exhibit notebook --  
24 **MR. STUCKY:** May I approach the  
25 witness?

1 transcript?  
2 **A. It wouldn't -- it wouldn't be different.**  
3 **MR. STUCKY:** I would ask that the  
4 District's Exhibit 20 be admitted into  
5 evidence.  
6 **PRESIDING OFFICER:** Any objection?  
7 GMD 20 will be admitted.  
8 **BY MR. STUCKY:**  
9 Q. A moment ago, I believe you said that you  
10 weren't actually involved in ASR Phase I and ASR  
11 Phase II. Is that what your testimony was?  
12 **A. I knew about it, but I didn't do any of the**  
13 **processing.**  
14 Q. So, for example, if you were to flip to page 17  
15 of Exhibit 20 and refer to line 9 of -- line 9  
16 on page 17, in fact, in your deposition, you  
17 also indicated that you weren't involved in  
18 Phase I or Phase II of the ASR project; is that  
19 true?  
20 **A. That's true.**  
21 Q. However, you indicated that your current role  
22 began in 2006; is that right?  
23 **A. That's correct.**  
24 Q. Do you know what the date of the ASR Phase II  
25 order is?

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1 **A. No, I don't.**  
 2 Q. I would ask --  
 3 **MR. STUCKY:** Approach the witness?  
 4 **PRESIDING OFFICER:** Yes.  
 5 **BY MR. STUCKY:**  
 6 Q. Do you recognize Exhibit 28, Mr. Letourneau?  
 7 **A. Yes, it is the, I believe, the master order for**  
 8 **Phase II.**  
 9 Q. And does that look like to be a true and correct  
 10 copy of that master order for Phase II?  
 11 **A. Yes.**  
 12 **MR. STUCKY:** I'm not sure if we've  
 13 moved to admit this already, but if we  
 14 haven't, I would like to move to admit  
 15 Exhibit 28, District Exhibit 28.  
 16 **PRESIDING OFFICER:** Any objection?  
 17 **MR. OLEEN:** No, Madam Hearing  
 18 Officer, I believe you've already taken  
 19 judicial notice of all Phase I and II  
 20 orders anyways.  
 21 **PRESIDING OFFICER:** That is true.  
 22 **BY MR. STUCKY:**  
 23 Q. Now, with respect to this particular exhibit, if  
 24 I were to tell you that this ASR Phase II order  
 25 is dated September 18, 2009, would you disagree

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1 with that date?  
 2 **A. No, that's the correct date.**  
 3 Q. So I guess my question is this: If you were in  
 4 your current role back in 2006 and ASR Phase II,  
 5 the date of that official order is 2009,  
 6 wouldn't you at least have had some involvement  
 7 in the ASR Phase II process?  
 8 **A. You know, I knew about it, but it was really Ken**  
 9 **Cope and Paul Graves at that time, I believe.**  
 10 **Yeah, I was there, but the other folks were**  
 11 **working on it. So I knew about it, of course.**  
 12 Q. So although you weren't one of the main horses,  
 13 if you will, working on ASR Phase II, you at  
 14 least had some knowledge of it and some, at  
 15 least, remote involvement in the process?  
 16 **A. Yes. Yes, I knew about it.**  
 17 Q. And as you have studied today's proposal that's  
 18 before the hearing officer today, you have also  
 19 had the occasion to look at the Phase I and  
 20 Phase II orders to prepare for this hearing?  
 21 **A. Yes.**  
 22 Q. And, in fact, would you also be familiar with  
 23 the memorandum of understandings that were  
 24 entered -- entered into for Phase I and Phase  
 25 II?

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1 **A. Yes.**  
 2 Q. Is it your understanding that with respect to  
 3 the memorandum of understanding with Phase I  
 4 that safe yield was a requirement?  
 5 **A. I'd have to review it again. I don't -- I don't**  
 6 **recall it right now, but I'd have to review it.**  
 7 Q. And off the top of your head, with respect to  
 8 Phase II, do you recall if safe yield was a  
 9 requirement?  
 10 **A. I didn't get that far -- that far into it.**  
 11 Q. Do you know just collectively with respect to  
 12 Phase I and Phase II if at some point a safe  
 13 yield requirement was put into place?  
 14 **A. I can't say without looking at documents.**  
 15 Q. I would ask that -- let's see. I would ask that  
 16 you flip to Exhibit 57 in Volume IV of the  
 17 District's notebooks. Do you know what -- do  
 18 you recognize Exhibit 57? If I were to tell you  
 19 that it's a letter that the City of Wichita sent  
 20 on June 24th, 2010 to a well owner asking for a  
 21 spacing waiver with respect to ASR Phase II,  
 22 would that look like an accurate depiction of  
 23 what this letter is?  
 24 **A. Yes.**  
 25 **MR. MCLEOD:** I'm going to object to

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1 that, I don't think that counsel has  
 2 foundation for establishing what that is.  
 3 **PRESIDING OFFICER:** Would you like  
 4 to rephrase?  
 5 **BY MR. STUCKY:**  
 6 Q. What is Exhibit 57?  
 7 **A. The first page of that, it's -- 57 is a number**  
 8 **of documents. That is a letter -- first one is**  
 9 **a letter to U.S. National Bank Association.**  
 10 Q. There's several letters?  
 11 **A. Correct.**  
 12 Q. And they're to individual well owners, would you  
 13 agree with that?  
 14 **A. Yes.**  
 15 Q. However, the basic content of each of the  
 16 letters is the same. Is that a true statement?  
 17 **A. Yes.**  
 18 Q. A moment ago, I characterized what these letters  
 19 were requesting. Can you state for the record  
 20 what it is these letters are requesting?  
 21 **A. It -- the last paragraph of the letter, the City**  
 22 **is respectfully requesting that the -- who the**  
 23 **letter went to sign a consent form.**  
 24 Q. Okay. And a consent form for what?  
 25 **A. For, it looks like, well spacing to a domestic**

1 well.  
2 Q. And so these are letters seeking to get consent  
3 from well owners to violate spacing requirements  
4 essentially. Is that a true statement?  
5 **A. I don't know about violate spacing requirements**  
6 **but to install a well less than spacing, you**  
7 **know, less than the spacing requirements that we**  
8 **have.**  
9 Q. Let me ask you this: Are these letters asking  
10 for exceptions to spacing requirements?  
11 **A. Yes.**  
12 Q. I'd ask that you look at the third sentence of  
13 this particular level -- I'm sorry, of this  
14 particular letter, could you read the third  
15 sentence of this letter, the very first letter  
16 in Exhibit 57?  
17 **A. Up to, is it the up to 65 --**  
18 Q. Yeah.  
19 **A. Okay. Up to 65 billion gallons of water can be**  
20 **stored in the portion of the aquifer that has**  
21 **been dewatered from predevelopment, 1940, until**  
22 **the water levels observed in 1993.**  
23 Q. So in that sentence of these letters, it  
24 mentions the 1993 level; is that correct?  
25 **A. It does.**

1 Q. And in clarifying for these well holders as far  
2 as assurances that they would have with regard  
3 to signing these spacing exceptions, one of  
4 those assurances was that water levels would not  
5 drop below the 1993 levels; is that correct?  
6 **A. That's correct.**  
7 Q. I'd ask that you now turn in your exhibit  
8 notebook to Exhibit 53.  
9 **A. In the same notebook?**  
10 Q. In the same notebook. Have you arrived at that  
11 spot in the notebook?  
12 **A. Yes, I'm there.**  
13 Q. Do you recognize Exhibit 53?  
14 **A. Yes.**  
15 Q. What is Exhibit 53?  
16 **A. It's a letter from David Warren, who was then**  
17 **the director of utilities, to the board of**  
18 **directors of GMD2.**  
19 Q. And what does this letter seek to accomplish?  
20 **A. It -- it's explaining well spacing for the ASR**  
21 **wells in one, two, three, four, five, six,**  
22 **seven, eight, nine, in nine applications, I**  
23 **believe.**  
24 Q. And so is it asking something of the GMD staff?  
25 I would ask that you read the second sentence of

1 **MR. STUCKY:** And I think that we've  
2 already moved to admit Exhibit 57 into  
3 evidence, but at this point I'll pause, and  
4 to the extent it wasn't already admitted, I  
5 would ask that it be admitted into  
6 evidence?  
7 **PRESIDING OFFICER:** Any objection?  
8 **MR. MCLEOD:** I would just ask a  
9 foundational question, are these letters  
10 that the City produced in response to  
11 discovery requests?  
12 **MR. STUCKY:** I believe they were.  
13 **MR. MCLEOD:** No objection.  
14 **PRESIDING OFFICER:** GMD 57 will be  
15 admitted.  
16 **BY MR. STUCKY:**  
17 Q. With regard to that first paragraph, could you  
18 read the last sentence of that paragraph?  
19 **A. Withdrawals will not be permitted if water**  
20 **levels are below the 1993 baseline established**  
21 **by the ASR permit.**  
22 Q. So in other words, these holders of water  
23 rights, if you will, were asked for spacing  
24 exceptions; is that correct?  
25 **A. That's correct.**

1 the letter. Aloud for the record.  
2 **A. Okay. The purpose of this letter is to seek a**  
3 **review of GMD staff recommendations and request**  
4 **a waiver and/or exemption of the GMD2 of the**  
5 **well spacing requirements in K.A.R. 5-22-2(a).**  
6 Q. So in other words, not only were some of the  
7 individual well -- or individual water right  
8 holders asked for spacing waivers, the City of  
9 Wichita also asked the GMD2 to grant some  
10 spacing waivers and exceptions to those  
11 regulations. Is that a true statement?  
12 **A. That's true.**  
13 **MR. STUCKY:** I would ask that the  
14 District's Exhibit 53 be admitted.  
15 **PRESIDING OFFICER:** Any objections?  
16 GMD 53 will be admitted.  
17 **BY MR. STUCKY:**  
18 Q. With regard to this letter in -- that's shown in  
19 Exhibit 53, there is some assurances that are  
20 made by the City of Wichita, specifically by  
21 Mr. Warren. Would that be an accurate  
22 statement?  
23 **A. Yes.**  
24 Q. And in particular, if we turn to the last page  
25 of this particular letter, could you read the

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1 very first sentence of the last paragraph of  
 2 that letter?  
 3 **A. Whereas there is an extensive public enhancement**  
 4 **to the -- to the public good associated with**  
 5 **restoring and preserving water levels in the**  
 6 **Equus Beds associated with the ASR project, and**  
 7 **whereas ASR water rights may be utilized only**  
 8 **when water levels exceed the level observed in**  
 9 **1993, and whereas without the exemption on well**  
 10 **spacing, the extensive number of existing**  
 11 **domestic and non-domestic wells will make it**  
 12 **impossible for the City to install an adequate**  
 13 **number of recharge wells in the project area,**  
 14 **the City requests that ASR wells be determined**  
 15 **to be exempt from well spacing requirements.**  
 16 Q. So once again, in this letter from the City to  
 17 GMD2, which would be the same as the District in  
 18 this case, the City, let's break this down,  
 19 first of all, asks for well spacing waivers,  
 20 correct?  
 21 **A. Correct.**  
 22 Q. And in asking for those well spacing waivers,  
 23 they made a few assurances under which those  
 24 well spacing waivers should be granted; is that  
 25 right?

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1 **A. That's right.**  
 2 Q. Was one of the assurances that was made by the  
 3 City of Wichita with respect to asking for the  
 4 well spacing waivers, was one of those  
 5 assurances that there would be no drop below the  
 6 1993 levels?  
 7 **A. In this letter, yes.**  
 8 Q. So in other words, what we see from Exhibit 57  
 9 and Exhibit 53 is that when well spacing waivers  
 10 were granted back at that time, they were  
 11 granted conditioned upon the understanding that  
 12 we wouldn't drop below the 1993 levels; is that  
 13 correct?  
 14 **A. That's correct.**  
 15 Q. So is it your view that if that is true, if  
 16 we're now dropping, seeking to drop below the  
 17 1993 levels, would it be your opinion that the  
 18 City should have to go to water right owners or  
 19 holders and seek new spacing waivers?  
 20 **A. Well, that's what this hearing process was about**  
 21 **was to try to get all of the locals notified and**  
 22 **things of that. I've not thought yet right now**  
 23 **about seeking new spacing waivers.**  
 24 Q. But certainly at least as we look at the fact  
 25 that there -- the spacing waivers were granted

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1 with that condition in mind, it at least creates  
 2 a question in your mind whether or not we should  
 3 seek new spacing waivers. Is that an accurate  
 4 characterization of what you're thinking?  
 5 **A. Well, it -- yes, it does -- it does raise a**  
 6 **question, but the proposal that we have in front**  
 7 **of us, whether it's the '93 level or the new**  
 8 **level, we're not seeing a significant difference**  
 9 **in the aquifer to where impairment would occur.**  
 10 **But this is the first -- first time that -- that**  
 11 **I've thought about it.**  
 12 Q. In his testimony, Mr. McCormick stated that it  
 13 was his opinion that minimum index levels were  
 14 not intended to be a requirement of Phase II.  
 15 Do you recall any of that testimony?  
 16 **A. Oh, I recall the testimony, yes.**  
 17 Q. So although Mr. McCormick said that for the  
 18 record, from what you've just reviewed and  
 19 having also looked at the ASR Phase II order, do  
 20 you believe a correction should be made to the  
 21 record with respect to whether or not spacing  
 22 waivers were a condition -- or not lowering the  
 23 minimum index level below the 1993 level was a  
 24 condition of ASR Phase II?  
 25 **A. Can you say that again, I'm sorry?**

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1 Q. Let me back up.  
 2 **A. Yeah.**  
 3 Q. Mr. McCormick testified that he didn't believe  
 4 that it was a condition of ASR Phase II to  
 5 assure that we wouldn't drop below the 1993  
 6 levels. Having reviewed Exhibit 53 and  
 7 Exhibit 57, do you believe that, in fact, it is  
 8 a requirement that with respect to ASR Phase II  
 9 we not drop below the 1993 levels?  
 10 **A. Well, the 1993 levels were carried over into**  
 11 **Phase II, if that -- I mean, based on this,**  
 12 **that's what happened.**  
 13 Q. So in other words, not dropping below the 1993  
 14 levels was a requirement of ASR Phase II?  
 15 **A. Yes.**  
 16 Q. And so to the extent that Mr. McCormick's  
 17 testimony stated otherwise, you would disagree  
 18 with that testimony; is that correct?  
 19 **A. Well, yeah, I mean, in a way that Phase II -- I**  
 20 **mean, the '93 levels were carried over --**  
 21 **carried forward into Phase II.**  
 22 Q. And, in fact, in ASR Phase II, and I can let you  
 23 look at the order again, for ASR Phase II, the  
 24 City agreed to not drop below the 1993 minimum  
 25 index level; is that correct?

1 **A. That's correct.**  
2 Q. Also based on your understanding of ASR Phase  
3 II, was physical water injected into the aquifer  
4 to receive a recharge credit?  
5 **A. Yes.**  
6 Q. First of all, can you explain for the record  
7 what's meant by physical water?  
8 **A. Wet water, I mean, an actual molecule of --**  
9 **actual water was put into the aquifer.**  
10 Q. And where would that water come from?  
11 **A. It would come initially from the Little Ark and**  
12 **then through the treatment facility and then**  
13 **injected or put into the recharge basin.**  
14 Q. Would it then be stored in the basin storage  
15 area?  
16 **A. Yes.**  
17 Q. Then at a later time, could that water be  
18 withdrawn and appropriated for municipal use?  
19 **A. A portion of it.**  
20 Q. And explain what you mean by a portion of it.  
21 **A. Well, when it goes into the basin storage area,**  
22 **it leaks a little bit, and so some of the**  
23 **recharge credit actually goes away.**  
24 Q. So to the extent the portion that remained,  
25 would that be then sent to the City and used for

1 **A. That's correct.**  
2 Q. At what point in that entire process was the  
3 water first appropriated to a beneficial use?  
4 **A. When it was taken from the Little Ark River**  
5 **for -- and treated at the treatment facility and**  
6 **then it's -- because in our system, we have that**  
7 **portion of it as artificial recharge, that's the**  
8 **beneficial use. So I believe -- I believe it**  
9 **would be metered from the river.**  
10 Q. So there's actually two beneficial uses that  
11 come into play with artificial recharge. Is  
12 that a true statement?  
13 **A. In this particular project, there's two, there's**  
14 **artificial recharge and municipal use.**  
15 Q. And, in fact, both of those are identified in  
16 the City's existing permits; is that right?  
17 **A. Yes.**  
18 Q. And so let's walk through the two beneficial  
19 uses. And, of course, Mr. Letourneau, for  
20 33 years, you've studied statutes and  
21 regulations, and I'm sure you're quite familiar  
22 with the Kansas Water Appropriation Act; is that  
23 correct?  
24 **A. I hope so.**  
25 Q. Is that a yes?

1 municipal use?  
2 **A. Yes, it could.**  
3 Q. So I want to make sure I understand ASR Phase  
4 II. So the steps are, number one, the Little  
5 Arkansas River would flood, and water could be  
6 taken from the Little Arkansas River; is that  
7 correct?  
8 **A. That's correct.**  
9 Q. Step number two is that this water could then be  
10 treated in the ASR treatment facility; is that  
11 right?  
12 **A. That's correct.**  
13 Q. Step number three is that after it's treated,  
14 that water could be injected into the aquifer;  
15 is that right?  
16 **A. That's correct.**  
17 Q. Step number four is that that water is then  
18 stored in the basin storage area of the aquifer?  
19 **A. Correct.**  
20 Q. Step number five is to determine what extent of  
21 that water was lost; is that -- is that correct?  
22 **A. That's correct.**  
23 Q. And to the extent the water wasn't lost, the  
24 next step was that this water could be sent to  
25 the City for municipal use; is that right?

1 **A. Yes.**  
2 Q. And I think that you understand that one of the  
3 touch -- touchstones of the Kansas Water  
4 Appropriation Act and the whole concept of prior  
5 appropriation is the ability to appropriate  
6 water for a beneficial use. You understand  
7 that?  
8 **A. Yes, that's the start of the project.**  
9 Q. And so in this case, understanding what those  
10 two beneficial uses are would be quite  
11 important; is that correct?  
12 **A. Yes.**  
13 Q. And so the first beneficial use occurs when this  
14 water is taken out of the Little Arkansas River  
15 and then injected into the actual aquifer, is  
16 that the first beneficial use?  
17 **A. Yes.**  
18 Q. And, in fact, when this water is taken out of  
19 the Little Arkansas River and injected into the  
20 aquifer, the beneficial use is artificial  
21 recharge; is that right?  
22 **A. That's correct.**  
23 Q. But then there's a second beneficial use that's  
24 been identified in the City's existing permits;  
25 is that right?

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1 **A. Yes.**  
 2 Q. At what point would the second beneficial use be  
 3 obtained by the City, would the City have first  
 4 obtained the second beneficial use or  
 5 appropriated it to the second beneficial use?  
 6 **A. When the City diverts a recharge credit for**  
 7 **municipal use.**  
 8 Q. So, one, artificial charge when it's injected  
 9 physically into the aquifer, number two is when  
 10 this credit, this physical recharge credit is  
 11 taken back out of the aquifer and taken to the  
 12 City where it can be used in the municipal water  
 13 supply; is that correct?  
 14 **A. That's correct.**  
 15 Q. And that would be the municipal beneficial use  
 16 in this case?  
 17 **A. That's correct.**  
 18 Q. Can you tell me what K.A.R. 5-22-7(b) is?  
 19 **A. If I could look at it. I can tell by the first**  
 20 **number it's a Groundwater Management District**  
 21 **No. 2 regulation.**  
 22 Q. I'm going to ask that you --  
 23 **MR. STUCKY:** May I approach the  
 24 witness?  
 25 **PRESIDING OFFICER:** Yes.

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1 **A. Do you have it up here?**  
 2 **BY MR. STUCKY:**  
 3 Q. Exhibit 22. I actually will ask that you turn  
 4 to Exhibit 24 of the District's notebook. I  
 5 apologize, I said Exhibit 22, I'm asking that  
 6 you turn to Exhibit 24.  
 7 **A. I'm there.**  
 8 Q. Do you recognize this to be the rules and  
 9 regulations that have been promulgated with  
 10 respect to water rights in Kansas?  
 11 **A. This is the rules and regulations of Equus Beds**  
 12 **Groundwater Management District No. 2, so yes.**  
 13 Q. Can you turn to K.A.R. 5-22-7(b)?  
 14 **A. I'm there.**  
 15 Q. If you could go to subsection (b) of K.A.R.  
 16 5-22-7.  
 17 **A. Okay.**  
 18 Q. There's certain exceptions to safe yield; is  
 19 that right? And, I'm sorry, just for a clear  
 20 record, let me back up. You're familiar with  
 21 this statute -- or, I'm sorry, this regulation  
 22 now?  
 23 **A. Yes, I am.**  
 24 Q. Tell me generally what this regulation is.  
 25 **A. This regulation refers to the safe yield and how**

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1 **it is applied within the boundaries of**  
 2 **Groundwater Management District No. 2.**  
 3 Q. Now turn to subsection (b) of that regulation.  
 4 **A. Okay.**  
 5 Q. In subsection (b), it says, the following shall  
 6 not be subject to this regulation, and then  
 7 there's a list of aspects that are not subject  
 8 to that regulation, correct?  
 9 **A. Yeah, just a second here, I got to get -- I got**  
 10 **to get with you.**  
 11 Q. If you turn to the second page of that  
 12 regulation, about halfway down, maybe two-thirds  
 13 of the way down, there is a subsection (b).  
 14 **A. Oh, okay, I'm there, thank you.**  
 15 Q. And right there, it says, the following shall  
 16 not be subject to this regulation?  
 17 **A. I'm there.**  
 18 Q. Those would essentially be aspects that would be  
 19 exempted from the safe yield regulation; is that  
 20 correct?  
 21 **A. That's correct.**  
 22 Q. Is one of those identified in subsection 7, is  
 23 one of those an application for an aquifer  
 24 storage and recovery well? At the very end of  
 25 that regulation?

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1 **A. That's correct.**  
 2 Q. So in other words, ASR Phase II was exempt from  
 3 the safe yield regulations; is that right?  
 4 **A. That's -- that's right.**  
 5 Q. When this regulation was enacted, did it only  
 6 contemplate actual physical injection of water  
 7 into the aquifer?  
 8 **MR. OLEEN:** Objection, I don't think  
 9 the witness can testify to what this  
 10 regulation contemplated or not.  
 11 **BY MR. STUCKY:**  
 12 Q. Mr. Letourneau, I'd ask that you turn to  
 13 Exhibit 20. If you could turn to page 69.  
 14 **A. Okay, I'm getting there. I'm there.**  
 15 Q. Actually, if you could turn -- look at page 70  
 16 of your deposition transcript.  
 17 **A. Okay, I'm there.**  
 18 Q. At the bottom -- and you would agree that Lee  
 19 Rolfs was the one who was asking you these  
 20 questions at the time of your deposition?  
 21 **A. Yes.**  
 22 Q. At the bottom of page 6 -- or page 70 of your  
 23 deposition, there's a discussion of regulation  
 24 5-22-7(b); is that right?  
 25 **A. Yes.**

1 Q. And, in fact, could you read the question and  
2 answer with respect to -- on -- starting on  
3 line 20 on page 70 and ends on line 24?  
4 **A. The question on line 20, and when the regulation**  
5 **was put into place, wasn't that based on the**  
6 **scenario where actual real water was being put**  
7 **into the aquifer for recharge, not AMC credits?**  
8 Q. And what was your answer?  
9 **A. My answer said, yes, that -- that's correct.**  
10 Q. So, in fact, in your deposition, you rendered an  
11 opinion with regard to whether or not, when this  
12 regulation was enacted, whether or not it  
13 contemplated the actual physical injection of  
14 water into the aquifer, did you not?  
15 **A. Yes.**  
16 Q. And what was your opinion at that time?  
17 **A. Well, the -- at the time when the regulation**  
18 **went into place, the only -- the only thing the**  
19 **City of Wichita could do was a physical recharge**  
20 **credit.**  
21 Q. And so this regulation when it was enacted was  
22 based on the concept that actual physical water  
23 would be injected into the aquifer, correct?  
24 **A. Correct.**  
25 **MR. STUCKY:** Madam Hearing Officer,

1 injecting water into the aquifer to be stored  
2 there; is that correct?  
3 **A. For a physical recharge credit, though, water**  
4 **had to be taken from the aquifer in the**  
5 **beginning to create a hole, and so aquifer was**  
6 **taken -- I mean, water was taken from the**  
7 **aquifer, but then it is from an outside source**  
8 **that it's replacing that water.**  
9 Q. Let me pause you there just for a minute. An  
10 aquifer level can go down from just natural  
11 occurring conditions, correct? In other words,  
12 a drought occurs, a water level in an aquifer  
13 can go down, correct?  
14 **A. Absolutely.**  
15 Q. I just want to make sure we have a clear record  
16 here because I thought you said that for an  
17 aquifer to have any kind of recharge capacity,  
18 somebody has to take water out of the aquifer,  
19 but, in fact, there could be natural reoccurring  
20 conditions that cause an aquifer to drop,  
21 correct?  
22 **A. Well, I think it would require pumping of some**  
23 **sort to make the aquifer go down.**  
24 Q. So your testimony is that if we have an aquifer  
25 and let's just say hypothetically that we have

1 I'm not sure we've ever resolved the  
2 objection, but I think that hopefully  
3 should satisfy Mr. Oleen.  
4 **MR. OLEEN:** I'll withdraw my  
5 objection, he testified as he testified at  
6 his deposition.  
7 **PRESIDING OFFICER:** Thank you.  
8 **BY MR. STUCKY:**  
9 Q. Why generally are recharge and recovery wells  
10 exempt from safe yield regulation K.A.R. 5-22-7?  
11 **A. It's not new water.**  
12 Q. And what do you mean by that?  
13 **A. It is not new water from the aquifer, it is not**  
14 **the natural recharge from the aquifer. It's**  
15 **not -- it's not nat -- you get natural recharge,**  
16 **that is part of the aquifer. This is artificial**  
17 **recharge, so it's water from the Little Ark**  
18 **River that's being induced to the aquifer.**  
19 Q. Let me see if I understand. Is the reason that  
20 it's exempt because water from an outside source  
21 is being added to the water supply in the  
22 aquifer?  
23 **A. Yes.**  
24 Q. And in other words, we're not taking water that  
25 already exists in the aquifer, we're first

1 ten years of no rain, your testimony is that the  
2 aquifer level wouldn't drop at all just based on  
3 an extreme drought condition alone?  
4 **A. Without -- and there's no pumping, is that --**  
5 Q. And there's no pumping, would the aquifer level  
6 drop?  
7 **A. It could, it could leak out, definitely.**  
8 Q. That's my question. So to modify your answer,  
9 would you agree that there could be a recharge  
10 capacity created in an aquifer, either both from  
11 pumping and from natural conditions that cause  
12 water to leak out of the aquifer?  
13 **A. Yes.**  
14 Q. So going back to K.A.R. 5-22-7, the reason why  
15 it's exempt is because water is taken from an  
16 outside source and then physically injected into  
17 the aquifer for a later appropriation; is that  
18 correct?  
19 **A. That's correct.**  
20 **MR. OLEEN:** Objection, I don't --  
21 the reason why what is exempt, could you  
22 perhaps restate your question?  
23 **BY MR. STUCKY:**  
24 Q. The reason that artificial storage and recovery  
25 is one of the exempt -- exemptions from the safe



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1 yield statute is because water from an outside  
 2 source is being added and physically injected  
 3 into the aquifer so it can be later  
 4 appropriated; is that correct?  
 5 **MR. OLEEN:** Objection. At this  
 6 time, I don't think Mr. Letourneau can  
 7 opine why a regulation is where it -- the  
 8 way it is. I -- unless he's testified that  
 9 he was part of the enactment of this  
 10 regulation or proposed it, or whatever, as  
 11 far as how it was created.  
 12 **MR. STUCKY:** Madam Hearing Officer,  
 13 he had an understanding of why this  
 14 regulation was enacted and what the purpose  
 15 was at the time it was enacted, he's  
 16 already testified to that, I think I've  
 17 asked a fair question. If he doesn't know  
 18 the answer to my question, then he can say  
 19 he doesn't know.  
 20 **MR. OLEEN:** He didn't -- he didn't  
 21 say he knew why a regulation was enacted,  
 22 as I recall. He said at the time it was  
 23 put in place there was not a specific  
 24 scenario that was contemplated. But as --  
 25 if you're asking him why a regulation was

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1 enacted, then don't we need to look at  
 2 the -- anytime regulations are proposed,  
 3 people issue regulatory pronouncements  
 4 about the policy reasons for them. I don't  
 5 think he can testify to the policy reasons  
 6 behind this, he didn't actually cause the  
 7 regulation to be enacted.  
 8 **PRESIDING OFFICER:** I think  
 9 Mr. Letourneau's experience and expertise  
 10 allows him to opine on what he may view as  
 11 a relationship between there being an  
 12 exemption with an ASR well. He doesn't  
 13 have to testify as to the intention behind  
 14 it, but he could testify in his experience  
 15 if he sees a relationship.  
 16 **MR. STUCKY:** That's fair.  
 17 **BY MR. STUCKY:**  
 18 Q. Mr. Letourneau, based on your 33 years of  
 19 experience at the Division of Water Resources,  
 20 is it your professional opinion and belief that  
 21 the reason that number 7 is exempt from K.A.R.  
 22 5-22-7 with respect to the aquifer storage and  
 23 recovery well, do you believe that the reason it  
 24 is exempt is because water is taken from an  
 25 outside source and then physically injected into

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1 the aquifer and that particular water can then  
 2 later be appropriated for a beneficial use?  
 3 **A. I think it is because -- my -- yes, I mean,**  
 4 **that's part of it, but it's my opinion that it's**  
 5 **not any new water, it's not naturally occurring**  
 6 **in the aquifer to be appropriated for any other**  
 7 **use. That's why I believe that regulation was**  
 8 **put into place. The only thing at the time,**  
 9 **though, was physical recharge credits when that**  
 10 **regulation was put into place.**  
 11 Q. So by it not being new water, you believe it's  
 12 exempt in the sense that new water is being put  
 13 into the aquifer from an outside source and  
 14 already existing water isn't being taken from  
 15 the aquifer, is that why you believe it's  
 16 exempt?  
 17 **A. Yes.**  
 18 Q. Does the Division of Water Resources ever  
 19 re-appropriate water that is not pumped from a  
 20 certified water right?  
 21 **A. No. We -- we may do it under the authority of**  
 22 **an offset where -- or we may do it under the**  
 23 **authority of a change application, but it's no**  
 24 **more additional water.**  
 25 Q. When I say the City's proposal, do you

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1 understand what the City's proposal means?  
 2 **A. Yes, absolutely.**  
 3 Q. Okay. For the record, how long have you been  
 4 involved in discussions or the development of  
 5 the City's proposal?  
 6 **A. A number of years now. I can't tell you the**  
 7 **start date, but we've discussed it for a number**  
 8 **of years.**  
 9 Q. A number of years ago, in the infancy of the  
 10 development of the proposal, did you have a  
 11 conversation with a Joe Pajor regarding the  
 12 proposal?  
 13 **A. A number of them.**  
 14 Q. And was one of the reasons why you first  
 15 discussed lowering the minimum index levels due  
 16 to a discussion about multi-year flex accounts?  
 17 **A. Yes.**  
 18 Q. Tell me the nature of that discussion with  
 19 Mr. Pajor.  
 20 **A. Oh, I don't -- I don't -- I mean, it would have**  
 21 **been just the City's concern about stranding**  
 22 **recharge credits. That's what I would -- that**  
 23 **would have been the nature of our discussions.**  
 24 Q. But also the fact that multi-year flex accounts  
 25 were being used at that time, did that also

1 influence the reason why you started to have  
2 those discussions?  
3 **A. It was. It was the first drought term permit**  
4 **and then taking those drought term permits into**  
5 **multi-year flex accounts.**  
6 Q. You heard discussion about multi-year flex  
7 accounts, were you involved in coming up with  
8 the concept of a multi-year flex account?  
9 **A. Well, the -- not the original one but the**  
10 **changes to the multi-year flex account 2012,**  
11 **absolutely.**  
12 Q. So you have an understanding of multi-year flex  
13 accounts?  
14 **A. Yes.**  
15 Q. Multi-year flex accounts are a way to plan over  
16 the course of five years; is that -- is that  
17 correct?  
18 **A. That's correct.**  
19 Q. Currently, with respect to multi-year flex  
20 accounts, is there a difference in the number of  
21 years of planning with respect to, say, an  
22 irrigation user versus a municipal user?  
23 **A. You know, I think it's different for -- any type**  
24 **of use, the planning would be different.**  
25 Q. Well, my question is the five-year period, is

1 **A. No.**  
2 Q. So right now, if the City of Wichita were to  
3 apply for a multi-year flex account, they would  
4 also have a five-year period that they would be  
5 subject to?  
6 **A. That's correct.**  
7 Q. Now, you helped to develop multi-year flex  
8 accounts, do you believe that they're a useful  
9 tool to help with drought planning if you're a  
10 water right holder?  
11 **A. Yes.**  
12 Q. Purely from a conceptual standpoint, would a  
13 multi-year flex account be a potential  
14 alternative to the City's proposal?  
15 **A. It -- it's a pretty short term for a city to try**  
16 **to plan within five years. Chris Beightel and I**  
17 **actually looked at that. There was a city -- we**  
18 **had a meeting at the Groundwater Management**  
19 **District No. 2 when GMD staff had brought it up.**  
20 **And we take all considerations very seriously,**  
21 **and Chris Beightel and I actually ran through**  
22 **some scenarios and thought that it was a pretty**  
23 **short window of opportunity for the City.**  
24 Q. So I guess my question is was the main concern  
25 with multi-year flex accounts as used as a tool

1 that different for, let's say, a municipal user  
2 versus an irrigation user, they both have five  
3 years, correct?  
4 **A. That's correct.**  
5 Q. And as the regulations currently exist, it's a  
6 five-year time period, whether it's an  
7 industrial, a municipal, or an irrigation user;  
8 is that right?  
9 **A. That's right.**  
10 Q. And, in fact, is it also true that municipal  
11 irrigation, industrial users could all use or  
12 benefit from a multi-year flex account?  
13 **A. They're all eligible for a multi-year flex**  
14 **account.**  
15 Q. There was a discussion earlier about how the  
16 perfection period for a municipality is  
17 different than the perfection period for a  
18 individual user of a water right. Is that a  
19 true statement?  
20 **A. The time frame is different.**  
21 Q. So my question is with respect to at least a  
22 multi-year flex account, was it ever  
23 contemplated to have a different time period for  
24 a municipality versus an individual water right  
25 owner?

1 for the City, was the main concern with that  
2 based on the short time period, the five years?  
3 **A. Yes.**  
4 Q. Was there another concern identified, or was  
5 that the primary concern?  
6 **A. That was the primary concern with Chris and I.**  
7 Q. If the time period in a multi-year flex account,  
8 let's say, was changed from five years to, let's  
9 say, eight years or ten years for a  
10 municipality, would you perceive it as a more  
11 viable alternative for the City for drought  
12 planning?  
13 **A. I -- I can't answer that. I'd have to take some**  
14 **time to review it.**  
15 Q. As you're sitting here today, you're not  
16 prepared to render an opinion on that?  
17 **A. No, I'm not prepared.**  
18 Q. Was the Division of Water Resources, to your  
19 knowledge, asked by the City of Wichita to  
20 calculate what the City's existing water rights  
21 in their multi-year flex account quantities  
22 would be?  
23 **A. I don't remember the City asking us. I remember**  
24 **Chris and I did it, but I don't remember the**  
25 **City asking us.**

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1 Q. So the Division of Water Resources did some of  
 2 these calculations as it relates to the City of  
 3 Wichita?  
 4 **A. Chris -- Chris Beightel and I looked at it.**  
 5 Q. Based on those calculations that were made, do  
 6 you have an opinion why five years would be too  
 7 short of a period to satisfy the City of  
 8 Wichita's needs?  
 9 **A. I think it had to do with the authorized**  
 10 **quantity, but I'm not prepared -- I'd have to go**  
 11 **back and review all of that, I'm not prepared.**  
 12 Q. Are there any notes or documents that you have  
 13 in the room here today that would help to  
 14 refresh your memory in that regard?  
 15 **A. I don't have it. I wasn't prepared to talk**  
 16 **about the multi-year flex accounts for the City.**  
 17 Q. During your deposition testimony, you mentioned  
 18 that recharge basins were a way that the City  
 19 could basically put water into the aquifer even  
 20 when the aquifer was full. Do you recall that  
 21 testimony?  
 22 **A. Yes.**  
 23 Q. So in other words, even if the aquifer is all  
 24 the way at the top of its capacity, completely  
 25 100 percent full, conceptually the City could

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1 take overflow water from the Little Arkansas  
 2 River and put it into one of those recharge  
 3 basins; is that correct?  
 4 **A. That's correct.**  
 5 Q. So in other words, if the City -- did you not  
 6 also say in your deposition that if the City  
 7 wanted to capture more water currently from the  
 8 Little Arkansas River when it floods it could  
 9 build additional recharge basins?  
 10 **A. It -- yeah, they could.**  
 11 Q. So in other words, based on the City's current  
 12 rights and current infrastructure, one way they  
 13 could improve their infrastructure to get  
 14 overflows from the Little Arkansas River, even  
 15 when the aquifer is full, is to simply build  
 16 more recharge basins. Is that a true statement?  
 17 **A. They -- I believe that's true.**  
 18 Q. Is it true that you were involved in changing  
 19 the minimum index levels and when they were  
 20 measured to a different date?  
 21 **A. Yes.**  
 22 Q. What was the old date the minimum -- the old  
 23 date that those minimum index levels were  
 24 measured?  
 25 **A. I -- you know, I believe it was in the**

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1 **summertime, but that's as close as I can get.**  
 2 Q. When did you change the date to when the new --  
 3 to when the new date, if you will, as far as  
 4 when the minimum index levels would be measured?  
 5 **A. I'd have to look at -- I do recall signing those**  
 6 **findings and orders, but I don't remember the**  
 7 **date.**  
 8 Q. Could you go to page 27 of your deposition,  
 9 which is Exhibit 20?  
 10 **A. Okay, I'm there. Two seven?**  
 11 Q. Page 27.  
 12 **A. Okay.**  
 13 Q. In looking at page 27 of your deposition  
 14 transcript, does that help to refresh your  
 15 memory as far as what those dates are?  
 16 **A. Yes, now it does.**  
 17 Q. What is the new date when those minimum index  
 18 levels are measured?  
 19 **A. In -- it's in January now.**  
 20 Q. And, in fact, you were involved in helping to  
 21 effectuate that regulation change; is that  
 22 correct?  
 23 **A. Correct.**  
 24 Q. What was the genesis behind the reason that you  
 25 wanted to change that measurement from being in

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1 the summer to in January?  
 2 **A. In January, there's not a lot of irrigation**  
 3 **pumping; therefore, the aquifer is at more of a**  
 4 **static water level. So that's why we want the**  
 5 **measurement in January.**  
 6 Q. What is the impact as it relates to the City --  
 7 from the City's standpoint, how does it benefit  
 8 or disadvantage the City to have the measurement  
 9 in January versus in the summer?  
 10 **A. Well, I think it benefits everybody by having it**  
 11 **in the -- in the wintertime because of the**  
 12 **static water level. But if you -- if we take it**  
 13 **in the summertime and there's irrigation**  
 14 **pumping, or all pumping, it's going to be lower**  
 15 **and then the City may not be able to recover a**  
 16 **recharge credit if it's below the minimum index**  
 17 **cell level.**  
 18 Q. So in other words, by measuring in January, it  
 19 would make it easier, if you will, for the City  
 20 to recover its recharge credits?  
 21 **A. Yes.**  
 22 Q. So from that standpoint alone, measuring -- this  
 23 regulation change and measuring in January  
 24 benefited the City in the sense that it would be  
 25 easier for the City to then recover recharge

1 credits; is that true?  
2 **A. That's true.**  
3 Q. Yesterday we heard a discussion about the  
4 concept of aquifer maintenance credits. Do you  
5 recall that discussion?  
6 **A. Yes.**  
7 Q. And, in fact, we also heard a discussion about  
8 how this idea came into play. Do you recall  
9 that discussion?  
10 **A. Yes.**  
11 Q. And both Mr. McCormick and Mr. Clement were  
12 asked if they came up with the idea for an  
13 aquifer maintenance credit, and both of them  
14 said that that idea was floating around at Burns  
15 & Mac since as early as 2007 but they're not  
16 exactly sure how that concept was derived. Do  
17 you recall that discussion?  
18 **A. Yes.**  
19 Q. You have been with the Division of Water  
20 Resources now for 33 years, were you involved in  
21 formulating the concept of an aquifer  
22 maintenance credit?  
23 **A. I was part of the meetings. I mean, I -- I did**  
24 **not have the original idea or anything, but it**  
25 **was a group of us that discussed the aquifer**

1 **proposal came in, of course, but I don't know, a**  
2 **year before the proposal, two years before the**  
3 **proposal.**  
4 Q. Who first approached you with the idea for an  
5 aquifer maintenance credit?  
6 **A. Probably Brian Meier with Burns & McDonnell.**  
7 Q. Is Mr. Meier currently in the room? Was he in  
8 the room earlier today?  
9 **A. I saw him earlier today, yeah.**  
10 Q. So would that be the same Brian Meier that was  
11 in the room earlier today?  
12 **A. Yes.**  
13 Q. In your testimony just a moment ago when  
14 Mr. Oleen was asking you questions, you  
15 identified table 2-3, figure 10, and figure 11  
16 in the City proposal as portions of the proposal  
17 that you would talk about to people that would  
18 ask you what the City's proposal meant; is that  
19 true?  
20 **A. That's absolutely true.**  
21 Q. And you said that figure -- figure 11 had the  
22 contingency added and table 2-3 helped to  
23 conceptualize some of the numbers of the City's  
24 proposal. You would use those portions as you  
25 were trying to explain to the general public or

1 **maintenance credits.**  
2 Q. And when you say a group of us, who was in that  
3 initial group?  
4 **A. Division of Water Resources, Burns & Mac --**  
5 **Burns & McDonnell, and City of Wichita.**  
6 Q. When would those first discussions have  
7 occurred, to the best of your memory and  
8 recollection?  
9 **A. Well, they go clear back, you know, to -- and I**  
10 **don't know about Phase I, but I know they were**  
11 **talked about in Phase II because they talked**  
12 **about the passive recharge credits in Phase II.**  
13 **The aquifer maintenance credits got very serious**  
14 **when the infrastructure of Phase II was built,**  
15 **and we could then look at that as a functioning**  
16 **equivalent of a physical recharge credit.**  
17 **That's when -- that's when the Division, at**  
18 **least, felt it was appropriate to accept an AMC**  
19 **as a functional equivalent of physical recharge.**  
20 Q. So as you thought through that time line as far  
21 as when -- how those discussions played out,  
22 when do you believe that you first discussed the  
23 concept of an aquifer maintenance credit? If  
24 you had a guesstimate as far as a year?  
25 **A. If I had to guesstimate, it was before the**

1 others how the proposal would work; is that  
2 correct?  
3 **A. That's correct.**  
4 Q. Tell me, when you were explaining these aspects  
5 of the proposal, would you tell people that it  
6 was your belief that this proposal should be  
7 approved eventually by -- by a hearing officer?  
8 **A. I don't know if I ever took it that far. I**  
9 **would address their concerns of how many**  
10 **recharge credits -- how much was going to be**  
11 **pumped out of the aquifer and how the aquifer**  
12 **was going to be -- ended up, but I don't know if**  
13 **I ever went so far as to say this needs to be**  
14 **approved.**  
15 Q. Did you express that you were in favor of the  
16 City's proposal to the general public?  
17 **A. I -- no, I wouldn't have said it like that. I**  
18 **would say that how proposed, we don't feel that**  
19 **it's going to cause any impairment and it is**  
20 **better to go into a 1 percent drought with a**  
21 **full aquifer, that's how I would have said it.**  
22 Q. I would ask that you turn to DWR's Exhibit 4, if  
23 that's still in front of you?  
24 **A. Yeah, it's here.**  
25 Q. It's a September 18, 2017 letter from David

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1 Barfield. On the last page of that letter,  
 2 right above the signature of Mr. Barfield, at  
 3 the top of that page in that first paragraph,  
 4 what does -- what did Mr. Barfield write with  
 5 respect to 110 percent, could you read that  
 6 aloud?  
 7 **A. Yes. We assume that the 110 percent assumption**  
 8 **for Cheney is based on the reservoir achieving**  
 9 **this level in non-drought years. If so, you**  
 10 **might state this basis.**  
 11 Q. So --  
 12 **A. This -- I don't want to interrupt you.**  
 13 Q. You're not interrupting me, go ahead.  
 14 **A. This was a letter back to the City asking them**  
 15 **to firm up the proposal, I believe.**  
 16 Q. So in other words, Mr. Barfield identified this  
 17 110 percent concern, if you will, for Cheney  
 18 Reservoir in this letter; is that right?  
 19 **A. That's correct.**  
 20 Q. Do you -- can you tell me what the City's  
 21 response was to Mr. Barfield addressing that 110  
 22 percent concern?  
 23 **A. Not without looking at it in a document.**  
 24 Q. Well, let me ask you this: Does the -- to the  
 25 best of your knowledge, does the Division of

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1 Water Resources have any kind of document that  
 2 indicates whether or not the City responded to  
 3 that concern?  
 4 **A. Somewhere in our discussions, we determined that**  
 5 **that was actually 100 percent, if I -- and that**  
 6 **was a typographical error in that table.**  
 7 Q. Certainly during this hearing, we've discovered  
 8 that it should have been 100 percent, but I  
 9 guess my question is did you learn that it  
 10 should have been 100 percent prior to this  
 11 hearing, and if so, was that demonstrated in any  
 12 type of written document or correspondence from  
 13 the City?  
 14 **A. And I've got to be honest, I don't know if we**  
 15 **found out about the typographical error before**  
 16 **or after the wall was built, you know, because**  
 17 **we've got so many things going on. So -- and I**  
 18 **don't know if we have anything in writing, but**  
 19 **our -- this team understands that that was a**  
 20 **typographical error.**  
 21 Q. Would it also be -- we had this hearing start  
 22 back in December, would it also be a true  
 23 statement that you don't recall if that first  
 24 came to your attention back in the December  
 25 hearing or at some point prior? In fact, do you

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1 not recall when this came to your attention?  
 2 **A. I -- I just know it's a typo, I don't recall**  
 3 **when it came to my attention.**  
 4 Q. So you don't know if the City, by way of letter  
 5 or other correspondence, responded to  
 6 Mr. Barfield back in 2017 with regard to that  
 7 error?  
 8 **A. I don't, no.**  
 9 Q. There were some other errors that were also  
 10 identified in the City's proposal, and you've  
 11 heard testimony in that regard; is that correct?  
 12 **A. That's correct.**  
 13 Q. Were any of those errors brought to your  
 14 attention prior to this hearing process  
 15 starting?  
 16 **A. I don't believe so.**  
 17 Q. Now, I'm interested in what work you personally  
 18 have done with regard to the City's modeling,  
 19 and I know that you testified a moment ago that  
 20 you're not really a modeler and so your work  
 21 would have been limited. And you can testify in  
 22 that regard. So my question is did you  
 23 personally analyze the City's -- any of the  
 24 City's MODSIM modeling?  
 25 **A. No.**

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1 Q. Did you personally analyze any of the City's  
 2 MODFLOW modeling?  
 3 **A. No.**  
 4 Q. Did you personally do any kind of independent  
 5 testing of any of the City's modeling?  
 6 **A. No.**  
 7 Q. Did you perform any additional simulations to  
 8 try and understand if the City's modeling was  
 9 correct?  
 10 **A. No.**  
 11 Q. Did you spend an hour or even a minute analyzing  
 12 any of the City's modeling?  
 13 **A. Not the modeling, no.**  
 14 Q. So if -- so if I were to ask you questions about  
 15 aspects of the City's model with regard to  
 16 parameters of the model, you wouldn't have an  
 17 opinion on that, correct?  
 18 **A. No. No.**  
 19 Q. You wouldn't be aware of any modifications to  
 20 the model?  
 21 **A. No.**  
 22 Q. You wouldn't have awareness of any errors with  
 23 the modeling itself?  
 24 **A. No.**  
 25 Q. You wouldn't have any opinion as far as the

1 model's ability to account for minimum desirable  
2 streamflow?  
3 **A. No, I wouldn't.**  
4 Q. You wouldn't have any opinion with respect to  
5 how the City determined gradational losses?  
6 **A. No. I was part of the meetings, but, no,**  
7 **that -- that was a discussion between the**  
8 **modelers.**  
9 Q. Would you agree with me, though, at least for  
10 the record, that gradational losses are  
11 generally higher closer to the river?  
12 **A. Yes.**  
13 Q. And, in fact, in your second -- your answers to  
14 the District's second interrogatories, you  
15 stated that; is that correct?  
16 **A. Yes.**  
17 Q. And just for housekeeping purposes, I would ask  
18 that you turn to Exhibit 13 in the City's -- or  
19 in the District's notebooks.  
20 **A. I'm there.**  
21 Q. Would you agree that -- or can you read what the  
22 title of this document is for the record?  
23 **A. DWR's Responses to GMD's -- GMD2's Second Set of**  
24 **Interrogatories.**  
25 Q. And toward the end of that document there is a

1 opinion, he signed off on this brief and  
2 that's introduced as an exhibit and we  
3 didn't object, it seems to me that where  
4 Mr. Letourneau has signed off on answers to  
5 discovery requests as being his official  
6 opinions, that could also be part of the  
7 record as far as evidence in this case. To  
8 me, they're analogous.  
9 **PRESIDING OFFICER:** I'll allow it.  
10 **MR. OLEEN:** Then I would ask, Madam  
11 Hearing Officer, if we can have all  
12 discovery that every party signed and  
13 exchanged be entered into the record so we  
14 have a comprehensive record because I --  
15 just as Mr. Letourneau signed discovery,  
16 it's my understanding that GMD signed  
17 discovery of the City, the City signed  
18 discovery of the Intervenors, et cetera.  
19 I'm okay with everybody in or no one in,  
20 but I think I have a problem with only one  
21 person in.  
22 **MR. STUCKY:** You know, and my  
23 response to that is Mr. Oleen can try his  
24 case however he chooses; if he wants to  
25 introduce discovery as part of his exhibits

1 signature; is that, in fact, your signature at  
2 the end of that document?  
3 **A. Yes.**  
4 **MR. STUCKY:** I would move to admit  
5 the District's Exhibit 13.  
6 **MR. OLEEN:** I respectfully object.  
7 Unless Mr. Stucky is going to use this for  
8 impeachment purposes, I don't think it's  
9 appropriate. If we're going to enter into  
10 evidence this set of discovery, then  
11 everybody's issues and answers to discovery  
12 in this case. So if it's for impeachment  
13 purposes, then I understand; but if not,  
14 then I didn't think it was appropriate to  
15 wholesale be admitting discovery documents  
16 into evidence.  
17 **PRESIDING OFFICER:** You wish to  
18 respond?  
19 **MR. STUCKY:** Yes, I think we're --  
20 if Mr. Letourneau signed off on these being  
21 his official opinions, whether it be by  
22 discovery -- and, you know, Mr. Oleen  
23 introduced a brief where Mr. Letourneau  
24 signed off on a brief as one of his  
25 exhibits, and that was his official

1 when he tries his case, that's perfectly  
2 fine with me, he's -- he's entitled to  
3 that.  
4 We have produced these exhibits in  
5 advance to all the parties, and you will  
6 see in our exhibits that, in fact, frankly,  
7 we have even our answers to some of the  
8 City's discovery in our exhibits, so we do  
9 have most of the discovery in our exhibits.  
10 But we have prepared these as our exhibits.  
11 However Mr. Oleen wants to handle his  
12 exhibits is just fine with me. If he wants  
13 to introduce additional discovery, that's  
14 fine, potentially, subject to whatever that  
15 discovery is. But we're asking that we be  
16 allowed to admit it in our case in chief.  
17 **PRESIDING OFFICER:** Is there any  
18 comment from the other attorneys? Since  
19 Mr. Oleen is suggesting admitting all  
20 discovery?  
21 **MS. WENDLING:** I have a question, is  
22 it all discovery or just the specific,  
23 like, interrogatory responses, because all  
24 discovery is a voluminous amount of  
25 information?

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1 **MR. OLEEN:** I guess I'm not  
 2 proposing that we admit exchanged  
 3 documents, but if we're going to -- it's my  
 4 understanding that you don't enter into  
 5 evidence signed discovery except for  
 6 impeachment purposes because the witness is  
 7 here and he can answer your question. If  
 8 he answers it in a contrary way to your  
 9 belief, then you can attempt to impeach him  
 10 through his signed statements. But I don't  
 11 have a problem with what Mr. Letourneau  
 12 signed from a subject matter.  
 13 So to answer Ms. Wendling's question, I  
 14 wouldn't propose that all exchanged  
 15 documents be admitted into the hearing  
 16 record, but I would propose that all  
 17 answered interrogatories, requests for  
 18 admission, I guess just those two, of every  
 19 party be put into the record.  
 20 **MR. STUCKY:** And we don't --  
 21 **PRESIDING OFFICER:** Mr. McLeod, I'd  
 22 like to hear from you.  
 23 **MR. MCLEOD:** Yes, thank you. First,  
 24 let me say, I don't object to Mr. Stucky's  
 25 request to admit these, and I don't object

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1 to Mr. Oleen's request to admit the  
 2 interrogatories and responses of the other  
 3 parties. And as far as the technical  
 4 aspects, Mr. Stucky is not trying his case  
 5 right now, he has the witness on cross, but  
 6 this is an administrative hearing.  
 7 Mr. Oleen's point is good, most courts  
 8 would say it's cumulative, but it's in --  
 9 it's in any hearing officer's or judge's  
 10 discretion to admit evidence that's  
 11 cumulative. I don't see the harm in doing  
 12 it. Technically, it may not be correct to  
 13 do it on cross except for impeachment.  
 14 We're in an administrative hearing, I don't  
 15 see the harm in allowing it.  
 16 **PRESIDING OFFICER:** So I'm assuming  
 17 behind all of this, you're not doing this  
 18 for purposes of impeachment?  
 19 **MR. STUCKY:** It's -- it's for both.  
 20 There's times when I'll introduce it as  
 21 Mr. Letourneau's official opinion, and  
 22 there's times I may use it for impeachment,  
 23 it's both. Part of the reason I think it's  
 24 beneficial to have it as exhibits is  
 25 they're numbered in our exhibit notebooks

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1 and it makes it easy for the witness to  
 2 reference, and so it will create efficiency  
 3 in this hearing. Rather than me having to  
 4 walk up to the witness every few minutes to  
 5 point to a place in our discovery, we  
 6 thought that since this was an  
 7 administrative hearing it would be logical  
 8 to have all the discovery as exhibits so I  
 9 could quickly reference them to the witness  
 10 and it would make this hearing process more  
 11 efficient.  
 12 Now, with regard to what Mr. Oleen said,  
 13 we don't have any problem if all  
 14 interrogatories and all requests for  
 15 admissions in this case be considered by  
 16 the hearing officer as evidence in this  
 17 case, we don't have an objection to that.  
 18 That seems like a reasonable request, we  
 19 don't have any objection to that request.  
 20 **PRESIDING OFFICER:** I'm a little  
 21 concerned about just a blanket admission  
 22 without specific identifiable documents in  
 23 front of me. Admission by category is not  
 24 something I'm particularly comfortable  
 25 with. This is an administrative hearing,

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1 the rules are a little more relaxed than  
 2 normal. Generally, I do not want  
 3 cumulative evidence, so I am hoping that  
 4 that is not something that is going to  
 5 become a problem with this. At this point,  
 6 I will allow these in. Other parties are  
 7 free to request admission of other items of  
 8 discovery should they want to, and we'll  
 9 address that as they come up, and I will  
 10 not limit that strictly to impeachment  
 11 context because, again, this is an  
 12 administrative hearing. Mr. Oleen.  
 13 **MR. OLEEN:** If I may add one more  
 14 thing, and maybe it was an intentional  
 15 choice of words, but Mr. Stucky referred to  
 16 this discovery as being Mr. Letourneau's, I  
 17 think maybe he said official opinion  
 18 testimony. And I just want to point out  
 19 that DWR's official opinion testimony is  
 20 the written testimony that was submitted.  
 21 What -- what was answered in the  
 22 discovery that the parties exchanged  
 23 happened before. I don't -- I can't recall  
 24 if there are changes in DWR's opinions from  
 25 the time they answered this written

1 discovery to the time they submitted their  
2 formal written testimony with the presiding  
3 officer.  
4 I guess that's a reason why I don't like  
5 this being admitted except for impeachment  
6 purposes because I think it would be an  
7 incorrect assumption to the extent there's  
8 differences in Mr. Letourneau's answers  
9 between the written answers and the formal  
10 testimony that he submitted, that could  
11 have occurred because of changes or  
12 information learned in the interim.  
13 So that's why I think it's really best  
14 for any questions that Mr. Stucky has to be  
15 asked of the witness today on the hearing  
16 instead of assuming that these questions  
17 still apply today.  
18 **PRESIDING OFFICER:** How is that  
19 different from impeachment?  
20 **MR. OLEEN:** Well, because it gives  
21 him the chance to say that circumstances --  
22 different information was learned from the  
23 point I answered this way versus how I did  
24 in the written testimony. And I guess  
25 if -- if Mr. Letourneau will still have

1 for the record what those are, if you would  
2 like.  
3 **PRESIDING OFFICER:** Please do.  
4 **MR. STUCKY:** Exhibit Number 3 is the  
5 Equus Beds answers to the City's  
6 interrogatories. Exhibit Number 4 is the  
7 Equus Beds answers to the City's second  
8 interrogatories. Exhibit Number 5 is the  
9 District's answers to the City's request  
10 for -- requests for admissions.  
11 Exhibit 6 is the City's answers to the  
12 District's interrogatories. Exhibit 7 is  
13 the City's answers to the District's  
14 request for admissions. Exhibit 8 is the  
15 City's answers to the District's second set  
16 of interrogatories. Exhibit 9 is the  
17 City's answers to the District's second set  
18 of requests for admissions. Exhibit 10 is  
19 the City's supplemental answers to the  
20 District's second requests for admissions.  
21 Exhibit 11 is the District's answers --  
22 or, I'm sorry, Exhibit 11 is the Division  
23 of Water Resources' answers to the  
24 District's interrogatories. Exhibit  
25 Number 12 is the Division of Water

1 that opportunity, then -- then fine. But I  
2 don't want the hearing officer to make  
3 judgments without giving Mr. Letourneau  
4 that opportunity to perhaps explain  
5 differences, if there are differences, I  
6 don't know.  
7 **PRESIDING OFFICER:** I agree with you  
8 that that opportunity should be provided.  
9 So to the extent that there are  
10 discrepancies, then Mr. Letourneau will be  
11 given an opportunity to explain those.  
12 Does that help resolve your concern?  
13 **MR. OLEEN:** Yes, thank you.  
14 **MR. STUCKY:** And I also agree that  
15 if we introduce all this discovery, it  
16 would be the onus on each of the attorneys  
17 for the parties to review that discovery  
18 and determine whether or not there's  
19 clarifying questions that need to be asked.  
20 But to Mr. Oleen's original point, if we  
21 want to introduce all the discovery, which  
22 would be the interrogatories and the  
23 requests for admissions, I would ask that  
24 the District's Exhibits 3 through 19 be  
25 admitted into evidence. And I can state

1 Resources' answers to the District's  
2 requests for admissions. Exhibit Number 13  
3 is the Division of Water Resources' answers  
4 to the District's second set of  
5 interrogatories. Exhibit Number 14 is the  
6 Division of Water Resources' answers to the  
7 District's second set of requests for  
8 admissions. Exhibit Number 15 is the  
9 Division of Water Resources' amended and  
10 supplemental response to interrogatory  
11 number 16 of the District.  
12 Exhibit Number 16 is the Intervenor's  
13 answers to the City's interrogatories.  
14 Exhibit Number 17 is the Intervenor's  
15 supplemental answers to the City's  
16 interrogatories. Exhibit Number 18 is the  
17 City's answers to the Intervenor's  
18 interrogatories. And Exhibit 19 is the  
19 Division of Water Resources' answers to the  
20 Intervenor's interrogatories. So I think  
21 that should qualify as all the discovery  
22 that Mr. Oleen asked to be admitted just a  
23 moment ago.  
24 **PRESIDING OFFICER:** Any comment?  
25 **MR. OLEEN:** If that's your



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1 reasonable belief that that is all of the  
 2 interrogatories and requests for admissions  
 3 that were exchanged by all the parties,  
 4 then yes.  
 5 **PRESIDING OFFICER:** Any other  
 6 comments, concerns? Okay. Hearing none,  
 7 GMD's Exhibits 3 through and including 19  
 8 will be admitted.  
 9 **MS. WENDLING:** Would this be an okay  
 10 time for a break?  
 11 **PRESIDING OFFICER:** That is a good  
 12 idea. It is 20 till 4:00, let's take a  
 13 ten-minute break.  
 14 (Thereupon, a recess was taken;  
 15 whereupon, the following was had.)  
 16 **PRESIDING OFFICER:** Okay. We're  
 17 back on the record. Mr. Stucky.  
 18 **MR. STUCKY:** Thank you, Your Honor.  
 19 **BY MR. STUCKY:**  
 20 Q. Earlier today, I asked you questions about  
 21 whether or not you agreed that your deposition  
 22 testimony was correct. Now, it's been pointed  
 23 to my attention that -- pointed out to my  
 24 attention that throughout your deposition  
 25 testimony transcript Mr. Boese was actually

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1 referred to as Mrs. Boese throughout your  
 2 testimony in that transcript. To the extent  
 3 that Mr. Boese is referred to throughout that  
 4 transcript as Mrs. Boese, do you agree that  
 5 that's a correction that could be made to your  
 6 transcript?  
 7 **A. That's a correction that could be made, yes.**  
 8 Q. So if I'm to ask you a question about something  
 9 that Mrs. Boese said, you would understand that  
 10 to be Mr. Boese; is that correct?  
 11 **A. That's correct.**  
 12 Q. Just a moment ago before we had a long  
 13 discussion about which exhibits should be  
 14 introduced, I was asking you what kind of  
 15 modeling that you personally had performed. Do  
 16 you recall that discussion?  
 17 **A. Yes.**  
 18 Q. And I asked you if you had done any modeling  
 19 with respect to minimum desirable streamflow,  
 20 gradational losses, things of that nature,  
 21 correct?  
 22 **A. That's correct.**  
 23 Q. And, in fact, you answered that you hadn't done  
 24 any modeling in that regard?  
 25 **A. That's correct.**

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1 Q. Is it also true that you haven't done any  
 2 modeling to determine whether or not the City's  
 3 proposal would impact water quality?  
 4 **A. That's correct.**  
 5 Q. Would you also agree that you haven't done any  
 6 modeling personally to determine whether or not  
 7 the City's proposal would result in impairment?  
 8 **A. That's correct.**  
 9 Q. So those questions that I asked you before had  
 10 to do with what you personally, Lane Letourneau,  
 11 did with respect to analyzing the City's model.  
 12 I'm now interested in your knowledge with  
 13 respect to what modeling the Division of Water  
 14 Resources did or what analysis the Division of  
 15 Water Resources and your colleagues did with  
 16 respect to the City's modeling. Do you know,  
 17 first of all, whether or not the Division of  
 18 Water Resources did any type of independent data  
 19 collection to verify any of the City's modeling?  
 20 **A. I don't know, I don't know if they did.**  
 21 Q. Could you go to Exhibit 21 in your notebook  
 22 before you? If you could go to Exhibit 20,  
 23 rather.  
 24 **A. Oh, yep.**  
 25 Q. And if you could now flip to page 51 of that

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1 document. Could you read for me the question  
 2 that begins on line 14 and your answer which  
 3 ends on line 17?  
 4 **A. Line 14, question: Okay. Did DWR do any  
 5 independent data collection regarding evaluating  
 6 Wichita's proposal?**  
 7 Q. And what was your answer?  
 8 **A. No.**  
 9 Q. So in other words, is it your testimony today  
 10 that the Division of Water Resources didn't  
 11 perform any kind of independent data collection  
 12 to evaluate the City's proposal?  
 13 **A. Yeah, I don't -- I don't know if they did, so I  
 14 don't -- my answer would be no.**  
 15 Q. And, in fact, the Division of Water Resources  
 16 didn't perform any types of independent  
 17 measurements. Is that a true statement as well?  
 18 **A. That's true.**  
 19 Q. And, in fact, the Division of Water Resources  
 20 didn't perform any independent calculations to  
 21 analyze the City's proposal; is that also true?  
 22 **A. Well, I don't know about the calculations.**  
 23 Q. I would ask -- could you read on page 50 -- on  
 24 page 51, could you read the question that begins  
 25 on line 14 -- I'm sorry, on line 20 and then the

1 answer that starts on line 25?  
2 **A. The --**  
3 Q. The question starts on line 18, sorry, and the  
4 answer starts on line 20, could you read that,  
5 please.  
6 **A. Yes, absolutely. Question is, did they test**  
7 **wells, check any other kind of measurements out**  
8 **there?**  
9 Q. And what was your answer?  
10 **A. No. We didn't do any well testing. If there**  
11 **was some water level measurements out there that**  
12 **we take quarterly or on an annual level, we**  
13 **would have -- we would have done that, but I'm**  
14 **not sure if there are any of those.**  
15 Q. So to the best of your knowledge and belief, are  
16 you aware of any kind of independent  
17 measurements or calculations that were performed  
18 by the Division of Water Resources to analyze  
19 the City's model?  
20 **A. I know that our field office did not go out and**  
21 **take any additional well measurements. I can't**  
22 **answer if one of our modelers had done any**  
23 **calculations.**  
24 Q. On the other hand, if the District has taken  
25 independent measurements or done independent

1 **A. I would have to look at it. I'm -- I'm familiar**  
2 **it's a GMD2 regulation, but I'd have to look at**  
3 **it.**  
4 Q. Could you go to Exhibit 24? Are you on that  
5 regulation now?  
6 **A. Yes. Oh, no, give me the number again, I'm**  
7 **sorry.**  
8 Q. 5-22-14.  
9 **A. Okay, I'm there now.**  
10 Q. With respect to that regulation, what is it?  
11 **A. K.A.R. 5-22-14 is maximum reasonable quantity**  
12 **for beneficial use.**  
13 Q. And, generally, what does this regulation  
14 accomplish?  
15 **A. Well, we want to make sure that all new**  
16 **appropriations are for a reasonable quantity.**  
17 Q. When a municipality applies for a water right  
18 and a quantity that they're perceiving as a  
19 reasonable quantity, are they allowed to, at  
20 least to a degree, project some growth into that  
21 demand?  
22 **A. We call it population demand growth, yes.**  
23 Q. Does this K.A.R., does this regulation put a  
24 time limitation on how far out the City can  
25 project its demand?

1 calculations, would you have, at least as you're  
2 sitting here today, reason to doubt those  
3 measurements and calculations?  
4 **A. No.**  
5 Q. Do you know what analysis the Division of Water  
6 Resources did of the City's drought modeling, in  
7 other words the MODSIM modeling?  
8 **A. I don't know.**  
9 Q. In other words, is it your position that you're  
10 not aware of any independent modeling that was  
11 done to verify the City's drought modeling?  
12 **A. You know, that's a question for our modeling**  
13 **team, I don't know what they did.**  
14 Q. But you wouldn't have been involved in any of  
15 that modeling, correct?  
16 **A. That's correct.**  
17 Q. You heard the City's testimony that they're  
18 basically planning for a drought by -- by 2060,  
19 as far out as 2060; is that right?  
20 **A. The projections are out to 2060, correct.**  
21 Q. So roughly how many year period is that?  
22 **A. From now?**  
23 Q. From now?  
24 **A. 40 years.**  
25 Q. Are you familiar with K.A.R. 5-22-14(f)?

1 **A. Well --**  
2 Q. I would ask that you flip to the next page and  
3 look at subsection (f).  
4 **A. Yeah, unless the applicant demonstrates a**  
5 **population deviation from actual population**  
6 **trends, a reasonable quantity of water for**  
7 **municipal use shall not exceed the lesser of**  
8 **either of the following. And as I read on in**  
9 **item number 2, population for the 20th year**  
10 **after the application is filed, so this one --**  
11 **this regulation lays out a 20-year population.**  
12 Q. So at least if the City were applying for a new  
13 application for a water right in this case, and  
14 I understand that that's not what their intent  
15 is, but if they were applying for a new  
16 application for a water right, it would have a  
17 20-year limit on their ability to project their  
18 needs. Is that a true statement?  
19 **A. That's a true statement.**  
20 Q. However, in this case, where the City has not  
21 filed for a new application for a water right,  
22 they're attempting to project out 40 years; is  
23 that correct?  
24 **A. That's correct, on already approved applications**  
25 **for drought modeling.**

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1 Q. So if a new application is conditioned by only a  
 2 20-year period, projection period, would a  
 3 modification of that application also be limited  
 4 by that 20-year period, or is it your testimony  
 5 that you can project out as far as you want if  
 6 you're a municipality?  
 7 **A. Well, you can -- we have municipalities project  
 8 out farther than 20 years. I mean, I know -- I  
 9 know we have them do that, but this proposal for  
 10 the -- the duration of the drought is different  
 11 than a new application, in my opinion.**  
 12 Q. Where were these other municipalities that  
 13 attempted to project out for more than 20 years,  
 14 can you name them?  
 15 **A. The most recent one, McPherson comes to mind.  
 16 And then -- well, there's -- I know we have some  
 17 other ones, but the most recent one, David, is  
 18 McPherson comes to mind.**  
 19 Q. With respect to McPherson, do they have  
 20 additional restrictions where it needs to be  
 21 looked at every ten years, for example?  
 22 **A. Yeah, absolutely. Yeah, there's a review  
 23 period.**  
 24 Q. So as far as just a blanket projection out a  
 25 number of years, that didn't occur with respect

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1 to McPherson, correct?  
 2 **A. No, no, there's some -- there's some caveats  
 3 with that.**  
 4 Q. So in other words, the City attempting to  
 5 project out 40 years, at least from your  
 6 33 years of experience with -- with the Division  
 7 of Water Resources, would that at least be  
 8 unique in your experience?  
 9 **A. I don't think it's unique. I mean, there's been  
 10 other ones do -- that do 40 and 50 years; I just  
 11 can't think of them off the top of my head  
 12 so ...**  
 13 Q. But at least from a time standpoint, the  
 14 40 years that the City is trying to project out  
 15 stands in stark juxtaposition to the 20 years  
 16 that is identified in -- as a time limitation  
 17 for a new application. Would you at least agree  
 18 with that statement?  
 19 **A. I agree with that, but I need to add a little  
 20 something to that. Currently, we do -- will do  
 21 an approval with a perfection period of  
 22 20 years. But in that particular perfection  
 23 rule, we will allow an extension out to 40 years  
 24 for perfection in that particular rule as long  
 25 as the City's making strides, or whatever, for a**

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1 **40-year projection.**  
 2 Q. Yesterday, and so much time has passed, I'm  
 3 forgetting if it was even this morning, there  
 4 was a discussion about other sources of supply  
 5 for the City, and there was a discussion about  
 6 Bentley reserve well field and the E&S well  
 7 field?  
 8 **A. Uh-huh, correct.**  
 9 Q. Do you believe that either of those sources are  
 10 firm sources of supply to the City?  
 11 **A. I don't think Bentley is. Bentley -- while  
 12 Bentley does have the water supply wells there  
 13 with native water rights, I think the quality's  
 14 poor. But I think the other -- the Wichita --  
 15 I'll call that other one the Wichita well field,  
 16 I think that is a firm -- I mean, there's native  
 17 water rights available at both of those for the  
 18 City, but I think the quantities are pretty  
 19 small.**  
 20 Q. So at least as you're sitting here today and  
 21 based on your independent review and opinion,  
 22 even though the quantities are small, would you  
 23 at least agree that those are additional sources  
 24 of supply that would be available to the City?  
 25 **A. They are additional sources, yes.**

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1 Q. Do you believe that it would have been best if  
 2 the City had included those additional sources  
 3 of supply in the modeling that the City  
 4 performed for that reason?  
 5 **A. Yeah, I think the quantities are so small, I  
 6 don't know if it would have made a difference  
 7 either way, but they sure could have, yeah.**  
 8 Q. I asked you just a moment ago about the modeling  
 9 that the Division of Water Resources did with  
 10 respect to MODSIM. Do you know if the Division  
 11 of Water Resources used Vistas at all?  
 12 **A. I -- I don't know in this case, but I know Sam  
 13 Perkins uses them, he talks about them.**  
 14 Q. And I was told that Vistas is an Excel  
 15 spreadsheet on steroids basically. Was that  
 16 utilized to -- by the Division of Water  
 17 Resources, to your knowledge, to help analyze  
 18 any of the modeling done by the City that's  
 19 before us today?  
 20 **A. I don't know.**  
 21 Q. With respect to the MODFLOW model, who looked at  
 22 the MODFLOW model for -- on behalf of the  
 23 Division of Water Resources, who looked at the  
 24 City's MODFLOW modeling and analyzed it?  
 25 **A. Well, it started with Jim Bagley, but I don't --**

1 then I don't know how much Sam was involved.  
2 But any MODFLOW modeling, we let Sam look at it,  
3 Sam Perkins. But I ...  
4 Q. I would ask that you turn in our first notebook  
5 to Exhibit 11 which is the Division of Water  
6 Resources' answers to our first set of  
7 interrogatories. Tell me when you're on that  
8 document.  
9 A. I'm -- I'm there, yes, thank you.  
10 Q. Would you turn with me to page 22?  
11 PRESIDING OFFICER: I'm sorry, which  
12 exhibit?  
13 MR. STUCKY: Exhibit -- Exhibit 11.  
14 BY MR. STUCKY:  
15 Q. If you could turn with me to page 11, which is  
16 question number 22.  
17 A. Okay.  
18 Q. There was a question asked, you were asked a  
19 question with respect to the interrogatories  
20 that you signed off on, you were asked a  
21 question regarding who on behalf of the Division  
22 of Water Resources would have, at least, looked  
23 at the modeling performed by the City, and  
24 there's a list of individuals that are given  
25 there. Could you tell me who those individuals

1 at it for the DWR.  
2 MR. OLEEN: Then if it's just to  
3 refresh memory type situation, then I -- my  
4 objection is essentially inapplicable.  
5 PRESIDING OFFICER: Okay. Is there  
6 a list, I'm not seeing on my exhibit a list  
7 of names?  
8 MR. STUCKY: Exhibit 11, page 11.  
9 PRESIDING OFFICER: Oh, at the very  
10 bottom.  
11 MR. STUCKY: At the very bottom.  
12 BY MR. STUCKY:  
13 Q. I asked you a moment ago who the individuals  
14 were that reviewed the City's modeling, and the  
15 name that you gave me before, I think, was just  
16 Jim Bagley. Were there other individuals that  
17 would have also looked at the City's modeling?  
18 A. Yes, Jim Bagley, David Barfield, Chris Beightel,  
19 and Ginger Pugh.  
20 Q. And with respect to the modeling that was  
21 performed, was it aimed in merely assisting the  
22 City in determining whether or not the modeling  
23 was performed correctly?  
24 A. Yes, based on this answer, it is.  
25 MR. OLEEN: Then I would -- I

1 are?  
2 A. Yes.  
3 MR. OLEEN: I'm just going to object  
4 to point out that DWR's answer to this  
5 interrogatory, like many of the GMD's  
6 discovery requests that we thought were  
7 objectionable in certain ways, was objected  
8 to by me, and so for any of these requests  
9 for admissions or interrogatories for which  
10 Mr. Stucky is attempting to read into  
11 evidence, I think my objection should  
12 stand, if there is such an objection. This  
13 is another reason why we don't typically  
14 read discovery into hearings because there  
15 can be unresolved objections to the  
16 questions. But so long as my objection is  
17 preserved and my objection can be ruled  
18 upon, if necessary, then I'm okay with us  
19 discussion -- discussing these.  
20 MR. STUCKY: In this case, I will  
21 tell you, to get inside my head in this  
22 situation, I'm not going to ask him to read  
23 any part of his answer. I'm doing it  
24 purely to refresh his memory as far as  
25 listing who the modelers were that looked

1 would -- I would say if the witness is  
2 going to say my answer is -- if his answer  
3 today is whatever he says orally, then my  
4 objection doesn't apply. If the witness is  
5 just reading his answer -- I want a  
6 distinction between is the witness saying  
7 this today, or is he saying it back then?  
8 If he's saying it today because it's still  
9 true from what he said back then, then  
10 fine. If he's just reading his answer and  
11 saying, I said this back then, then I have  
12 a standing objection to the question. I  
13 know that's kind of confusing but ...  
14 PRESIDING OFFICER: Well, this gets  
15 back to refreshing a memory.  
16 MR. OLEEN: Okay, well, his response  
17 was, I think he said it says here whatever,  
18 and --  
19 A. Oh, okay.  
20 MR. OLEEN: -- and if that's -- if  
21 what is said there is still what's true  
22 today and he's going to orally say that,  
23 then -- then okay.  
24 MR. STUCKY: I'll try and respond,  
25 I'm a little confused what the objection

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1 is, but as I understand it, if I was to use  
 2 this only for impeachment purposes, then I  
 3 could have him read his answer, but to the  
 4 extent his answer is to be utilized as  
 5 evidence, then he can no longer read his  
 6 answer, is that -- is that the position?  
 7 Because it's my perspective that  
 8 Mr. Oleen can follow along with all the  
 9 questions I'm asking, and it's his witness,  
 10 if he believes that I've misled the witness  
 11 or that these opinions somehow have changed  
 12 with respect to this witness, either the  
 13 witness can correct that opinion,  
 14 number one, or Mr. Oleen can go back with a  
 15 redirect and clarify with that redirect.  
 16 From my perspective, that's how that would  
 17 be addressed.  
 18 **MR. OLEEN:** I would just hope that  
 19 we ask the witness a question, if he  
 20 doesn't know the answer and he needs  
 21 something to refresh his memory, then we  
 22 can refer to the written discovery. If  
 23 that refreshes his memory, then he can say  
 24 what the answer is to the oral question.  
 25 If we're doing that process, then fine.

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1 I just don't -- I don't want the witness  
 2 to think that he has to read into evidence  
 3 what's written down here because he doesn't  
 4 have to do that in response to an oral  
 5 question. We're here -- we're here to  
 6 answer Mr. Stucky's oral questions. And I  
 7 don't want the witness to be confused.  
 8 **MR. STUCKY:** And my response is  
 9 I've -- with due respect, I've had a lot of  
 10 trials before and when I'm asking witnesses  
 11 in a trial, if I ask them to read a part of  
 12 the record or a part of an exhibit, when  
 13 the witness is under oath and it's my  
 14 questioning, they generally have to read  
 15 that exhibit if it's something I ask them  
 16 to do. And so if I'm the one asking the  
 17 questions, I think, and if it's a  
 18 reasonable basis, then I'm asking them to  
 19 read a part of a question or an answer, I  
 20 think that that could be made part of the  
 21 record.  
 22 **MR. OLEEN:** But the problem,  
 23 Mr. Stucky, is that I have objections to  
 24 your written questions that you're  
 25 circumventing by attempting to have the

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1 witness read into evidence his answer to  
 2 your written question. I have a standing  
 3 objection to the written question. I don't  
 4 necessarily have a standing objection to  
 5 your oral question. I have to stand up and  
 6 say that today.  
 7 And what I'm concerned with the way  
 8 we're using this is that my written  
 9 objections to the question are being  
 10 circumvented by attempting to have the  
 11 witness read into evidence what he said.  
 12 He's -- he's supposed to answer the  
 13 questions orally.  
 14 I don't mean to make a big deal about  
 15 something that -- I don't even know what's  
 16 all in this answer yet, I haven't fully  
 17 read it, I am just concerned that my  
 18 written objections to these written  
 19 discovery questions are being circumvented  
 20 by how we're doing this today.  
 21 **MR. STUCKY:** Just for the benefit of  
 22 everybody in the room, I'll try and ask  
 23 questions in such a way that it satisfies  
 24 Mr. Oleen, if I may. I'll just proceed in  
 25 that fashion for the most part.

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1 **PRESIDING OFFICER:** That would be  
 2 fine. I'd also just pull us back to a few  
 3 minutes ago when you were given assurances,  
 4 Mr. Oleen, that if there were any  
 5 differences in Mr. Letourneau's answers  
 6 from then to now that he would be given the  
 7 opportunity to explain why they may be  
 8 different, so that still remains in effect.  
 9 And I don't believe you're waiving any  
 10 objections that are in the record. These  
 11 are admitted exhibits, and as any other  
 12 exhibits, they could be read into the  
 13 record. That doesn't mean, from my point  
 14 of view -- if a witness is reading  
 15 something into the record, he is clearly  
 16 reading an exhibit into the record. That  
 17 doesn't necessarily mean that witness now  
 18 attests to that as their testimony. Does  
 19 that help you at all?  
 20 **MR. OLEEN:** I think so. Yes.  
 21 **PRESIDING OFFICER:** And  
 22 Mr. Letourneau is free to explain when you  
 23 are questioning him again if he agrees now  
 24 with what this says in this exhibit.  
 25 **MR. OLEEN:** Okay.

1 **PRESIDING OFFICER:** Okay.  
2 Mr. Stucky.  
3 **BY MR. STUCKY:**  
4 Q. Prior to the objections and the discussion  
5 regarding the objections, I asked you questions  
6 with regard to any kind of independent modeling  
7 or analysis that the Division of Water Resources  
8 did to verify the City's modeling. Do you  
9 recall some of those questions?  
10 **A. Yes.**  
11 Q. And if you were to look at the answer to  
12 interrogatory number 22, do you believe that the  
13 Division of Water Resources attempted to  
14 independently replicate the modeling work of the  
15 City's consultants?  
16 **A. No.**  
17 Q. And, in fact, based on having looked at this  
18 answer, is it your belief that the Division of  
19 Water Resources did independent modeling work or  
20 tried to analyze in great detail the City's  
21 modeling?  
22 **A. No, we agreed with the model.**  
23 Q. And does your answer, at least, to this  
24 interrogatory suggest that the scope of the  
25 Division of Water Resources' analysis of the

1 modeling was to look at it, along with the  
2 inputs, to determine whether or not they  
3 appeared reasonable?  
4 **A. Yes.**  
5 Q. And, in fact, is it your belief that the  
6 Division of Water Resources would not have  
7 attempted to pick apart the City's modeling?  
8 **A. That's correct.**  
9 Q. Would you also agree that with respect to any of  
10 the City's modeling, the Division of Water  
11 Resources never modeled or considered water  
12 quality as it relates to the City's proposal?  
13 **MR. OLEEN:** Objection, asked and  
14 answered.  
15 **MR. STUCKY:** Madam Hearing Officer,  
16 previously, I asked him if Mr. Letourneau  
17 personally had modeled or considered water  
18 quality for him personally. Now I'm asking  
19 for the Division of Water Resources as a  
20 whole, so it's a separate line of  
21 questioning.  
22 **PRESIDING OFFICER:** Okay. Could you  
23 say it again, the question you're asking?  
24 **BY MR. STUCKY:**  
25 Q. Did the Division of Water Resources -- the

1 Division of Water Resources never performed any  
2 kind of modeling to determine whether or not the  
3 City's proposal would impact water quality,  
4 correct?  
5 **A. That's correct, because the proposal did not --**  
6 **was not making adjustments to Phase I.**  
7 Q. And once again, the Division of Water Resources  
8 never performed any types of independent  
9 simulations as it relates to the City's proposal  
10 or the City's modeling, correct?  
11 **A. Not that I'm aware of.**  
12 Q. I would ask that you turn to Exhibit 20. If you  
13 were to look at page 53, line 3 of Exhibit 20,  
14 would you agree that you at least answered that  
15 your program or your division didn't perform any  
16 type of modeling as it related to the City's  
17 proposal?  
18 **A. That's correct, the water appropriation program**  
19 **did not.**  
20 Q. But, ultimately, whose division of -- when we're  
21 talking about divisions of the Division of Water  
22 Resources, that sounds somewhat confusing, whose  
23 division would be responsible for ultimately  
24 making a decision about whether or not to  
25 recommend the City's proposal that's before us

1 today, whose division would that be?  
2 **A. Water management services, the water management**  
3 **services program. Because the chief engineer is**  
4 **in that program.**  
5 Q. Who is -- and which division or program are you  
6 a part of?  
7 **A. I'm a part of the water appropriation program.**  
8 Q. So it's your testimony that it's a separate  
9 division, if you will, that would make the  
10 recommendation whether or not the City's  
11 proposal should be approved?  
12 **A. It's a team of us. It's -- I understand your**  
13 **question now. It's both programs, water**  
14 **management services and water appropriation.**  
15 Q. But on behalf of water appropriation, would it  
16 generally be you that would make a  
17 recommendation either in favor or against the  
18 City's proposal?  
19 **A. Yes. I'm -- I'm responsible for the -- yes.**  
20 **Yeah, I would be responsible for that.**  
21 Q. So purely as it relates to a recommendation  
22 either for or against the City's proposal as it  
23 relates to your division, water appropriations,  
24 your opinion isn't based on having looked at any  
25 kind of independent modeling with respect to the

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1 City's proposal, correct?  
 2 **A. Correct.**  
 3 Q. Earlier, Mr. Oleen introduced Exhibit 1, DWR's  
 4 Exhibit 1, and in DWR's Exhibit 1, this concept  
 5 of a functional equivalent is identified. Would  
 6 you agree that the concept of a functional  
 7 equivalent is, in fact, addressed in that  
 8 letter?  
 9 **A. Yes.**  
 10 Q. Who first came up with the concept of a  
 11 functional equivalent?  
 12 **A. I -- I don't know which one of the team did.**  
 13 Q. I guess my question is did the idea of a  
 14 functional equivalent, did that terminology  
 15 originate with the Division of Water Resources,  
 16 or do you believe that it originated with the  
 17 City?  
 18 **A. I -- you know, it was all part of our**  
 19 **discussions; I don't know which side would have**  
 20 **come up with the functional equivalent.**  
 21 Q. Okay. And so if you -- if you're not aware of  
 22 which side came up with the concept of a  
 23 functional equivalent, then you certainly  
 24 wouldn't be able to mention the person that came  
 25 up with this concept; is that right?

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1 **A. That's correct.**  
 2 Q. When the concept for functional equivalent was  
 3 developed, as those discussions occurred, who  
 4 was at the table, what parties were at the  
 5 table?  
 6 **A. Burns & McDonnell, Wichita, and the Division of**  
 7 **Water Resources.**  
 8 Q. Was the District part of those discussions?  
 9 **A. You know, I think they were early on, but then I**  
 10 **think there was some break -- there was some**  
 11 **breakdown, and then it just became the Division,**  
 12 **Wichita, and Burns & Mac.**  
 13 Q. As you're sitting here before us today, do you  
 14 know why at some point the District was excluded  
 15 from those discussions?  
 16 **A. I -- I cannot say other than Wichita and the**  
 17 **District couldn't agree, I believe is what**  
 18 **happened, but I don't know exactly when that**  
 19 **happened.**  
 20 Q. So basically just because the District expressed  
 21 some concerns, perhaps, with the modeling or  
 22 some concerns with, let's say, errors in the  
 23 proposal itself, just because the District  
 24 expressed some of those concerns, they were  
 25 excluded from the table and excluded from those

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1 discussions, is that basically your  
 2 understanding?  
 3 **A. Well, I don't -- I think they were excluded from**  
 4 **the discussion to build a proposal, but then**  
 5 **they're all -- they're still part of the**  
 6 **process. I mean, they're part of this hearing,**  
 7 **and then after this hearing, if it moves**  
 8 **forward, it'll go to the board for a**  
 9 **recommendation.**  
 10 Q. But my question is back when the concept of a  
 11 functional equivalent was being discussed and  
 12 there was Burns & Mac, the Division of Water  
 13 Resources, and the City were all in a room, all  
 14 part of these discussions, the reason that was  
 15 identified for me for why the District would be  
 16 excluded was because the District had differing  
 17 viewpoints from the City of Wichita, is that --  
 18 was there another reason why --  
 19 **A. No.**  
 20 Q. -- they would have been excluded from those  
 21 discussions?  
 22 **A. I don't think so.**  
 23 Q. Okay. So that's, in your -- from your  
 24 standpoint, the primary or main reason why the  
 25 District, then, would have been excluded from

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1 those discussions?  
 2 **A. It was a different viewpoint.**  
 3 Q. So the answer is yes?  
 4 **A. Yes. Yes.**  
 5 Q. Hindsight is always 20/20, but as you're sitting  
 6 here today, even though the District had a  
 7 differing opinion back at that time and as we've  
 8 identified errors in the City's proposal that  
 9 have come out for the first time during this  
 10 hearing process, do you believe that looking  
 11 back it would have been best to continue to  
 12 involve the District in those discussions?  
 13 **A. Yeah, I'm -- sure, if -- if folks could agree, I**  
 14 **think it would have been better.**  
 15 Q. But even if the District had differing  
 16 viewpoints, wouldn't it have been best if the  
 17 District could have raised those viewpoints back  
 18 in those early discussions?  
 19 **A. I -- I think the District did to the point that**  
 20 **the City of Wichita had become frustrated with**  
 21 **the District.**  
 22 Q. So it was -- so it wasn't the Division of Water  
 23 Resources that asked that the District be  
 24 excluded from the table, it was the City of  
 25 Wichita that asked that the District not be

1 included in those discussions. Is that a true  
2 statement?

3 **A. Actually, the -- yes, because the -- David**  
4 **Barfield asked the City and the District to meet**  
5 **and work out their differences. I think they**  
6 **met for a number of months, and they couldn't,**  
7 **they couldn't work them out.**

8 Q. But to the best of your knowledge, you're not  
9 aware of any time where the District said, we're  
10 not going to further meet with the City?

11 **A. That's correct.**

12 Q. So that to the extent the City -- the District  
13 was excluded from the discussions, that was a  
14 request made by the City; is that right?

15 **A. I believe so. It was -- it was more of just**  
16 **wanting to meet with Burns & Mac, Division, and**  
17 **the City.**

18 Q. Now, let's move back to Exhibit 1, which is  
19 where we first identify this functional  
20 equivalent concept. You -- Mr. Oleen asked you  
21 a few questions as far as why you believe that  
22 an AMC is a functional equivalent. Could you  
23 break down for me in a conceptual manner how a  
24 aquifer maintenance credit is a functional  
25 equivalent of actual physical recharge again?

1 **A. Yes. So the water has to be available from the**  
2 **Little Ark, and it is taken at the diversion**  
3 **point from the Little Ark, the authorized point**  
4 **of diversion from the Little Ark River; it's**  
5 **taken to the treatment facility, treated; then**  
6 **it leaves the treatment facility, and at that**  
7 **point a decision has to be made if there's room**  
8 **in the aquifer. And if there's room in the**  
9 **aquifer, then it becomes a physical recharge**  
10 **credit; if there's not room in the aquifer, then**  
11 **it's taken directly to the City but gets the**  
12 **aquifer maintenance credit at that point. It is**  
13 **not making the City pump a gallon just to**  
14 **replace it with a gallon. It's not taking the**  
15 **water through the aquifer to build the credit**  
16 **basically, it's taking it directly to town.**

17 Q. We'll discuss those concepts in great detail  
18 later, but at least for now, for our purposes  
19 now, who made the decision that the aquifer  
20 maintenance credit concept was consistent with  
21 current regulations and statutes, who made that  
22 final decision?

23 **A. Robert -- well, the chief legal counsel at the**  
24 **time that reviewed it, I believe, was Robert**  
25 **Large, and -- and I don't know if Kenny Titus**

1 **then came along later to tidy up, but it was**  
2 **Robert Large. But then it's ultimately the**  
3 **chief engineer's decision whether it meets the**  
4 **rules and regs.**

5 **We met -- we asked our legal counsel to**  
6 **review it, and I know the City asked their legal**  
7 **counsel to review it to see if we needed to make**  
8 **a regulation change. And after both sides**  
9 **reviewed it, we decided that it was just another**  
10 **type of recharge credit, so we didn't change the**  
11 **rules.**

12 Q. I would ask that you turn to Exhibit 11 again, I  
13 think it's already in front of you.

14 **A. Okay, I'm there.**

15 Q. With respect to Exhibit 11, could you turn to  
16 page 9 and there's an interrogatory on page 9 of  
17 that document? Interrogatory 19 on page 9, are  
18 you -- tell me when you're there,  
19 Mr. Letourneau.

20 **A. I'm there.**

21 Q. As you look at the response to interrogatory  
22 number 19, does that help to refresh your memory  
23 as far as, at least when you signed off on these  
24 interrogatories, who might have done a legal  
25 analysis of the City's proposal?

1 **A. Yes.**  
2 Q. Who were the individuals that were involved in  
3 that process?  
4 **A. Such legal reviews at varying degrees by chief**  
5 **legal counsel Robert Large and/or Wendee Grady,**  
6 **and by current KDHE counsel Kenneth Titus.**  
7 Q. And I believe also in that answer, the chief  
8 engineer's letters, and there's a couple letters  
9 that are referenced there also indicated in that  
10 answer?  
11 **A. That's correct.**  
12 Q. With regard to the regulations that were  
13 considered, three lines up from the bottom of  
14 that answer there's some regulations that were  
15 identified that the individuals that reviewed  
16 the City's proposal from a legality standpoint  
17 would have looked at. Can you tell me what  
18 those regulations are?  
19 **A. K.A.R. 5-1-1, 5-12-1 through 5-12-4.**  
20 Q. And it also says that -- it also states that  
21 there was other applicable GMD2 regulations and  
22 relevant statutory provisions of the Kansas  
23 Water Appropriation Act that were considered as  
24 well; is that right?  
25 **A. That's correct.**

1 **A. Yes.**  
2 Q. Who were the individuals that were involved in  
3 that process?  
4 **A. Such legal reviews at varying degrees by chief**  
5 **legal counsel Robert Large and/or Wendee Grady,**  
6 **and by current KDHE counsel Kenneth Titus.**  
7 Q. And I believe also in that answer, the chief  
8 engineer's letters, and there's a couple letters  
9 that are referenced there also indicated in that  
10 answer?  
11 **A. That's correct.**  
12 Q. With regard to the regulations that were  
13 considered, three lines up from the bottom of  
14 that answer there's some regulations that were  
15 identified that the individuals that reviewed  
16 the City's proposal from a legality standpoint  
17 would have looked at. Can you tell me what  
18 those regulations are?  
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20 Q. And it also says that -- it also states that  
21 there was other applicable GMD2 regulations and  
22 relevant statutory provisions of the Kansas  
23 Water Appropriation Act that were considered as  
24 well; is that right?  
25 **A. That's correct.**

7 Q. And I believe also in that answer, the chief  
8 engineer's letters, and there's a couple letters  
9 that are referenced there also indicated in that  
10 answer?  
11 **A. That's correct.**  
12 Q. With regard to the regulations that were  
13 considered, three lines up from the bottom of  
14 that answer there's some regulations that were  
15 identified that the individuals that reviewed  
16 the City's proposal from a legality standpoint  
17 would have looked at. Can you tell me what  
18 those regulations are?  
19 **A. K.A.R. 5-1-1, 5-12-1 through 5-12-4.**  
20 Q. And it also says that -- it also states that  
21 there was other applicable GMD2 regulations and  
22 relevant statutory provisions of the Kansas  
23 Water Appropriation Act that were considered as  
24 well; is that right?  
25 **A. That's correct.**

11 **A. That's correct.**

12 Q. With regard to the regulations that were  
13 considered, three lines up from the bottom of  
14 that answer there's some regulations that were  
15 identified that the individuals that reviewed  
16 the City's proposal from a legality standpoint  
17 would have looked at. Can you tell me what  
18 those regulations are?  
19 **A. K.A.R. 5-1-1, 5-12-1 through 5-12-4.**  
20 Q. And it also says that -- it also states that  
21 there was other applicable GMD2 regulations and  
22 relevant statutory provisions of the Kansas  
23 Water Appropriation Act that were considered as  
24 well; is that right?  
25 **A. That's correct.**

19 **A. K.A.R. 5-1-1, 5-12-1 through 5-12-4.**

20 Q. And it also says that -- it also states that  
21 there was other applicable GMD2 regulations and  
22 relevant statutory provisions of the Kansas  
23 Water Appropriation Act that were considered as  
24 well; is that right?  
25 **A. That's correct.**

25 **A. That's correct.**



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1 Q. Off the top of your head, do you know any other  
 2 specific regulations or statutes that would have  
 3 been considered as part of those discussions?  
 4 **A. Not off the top of my head.**  
 5 Q. Is there anyone in the room today that would be  
 6 able to answer what additional statutes and  
 7 regulations would have entered into those  
 8 discussions?  
 9 **A. Not that I'm aware of.**  
 10 Q. Tell me just a little bit about the  
 11 conversations that you personally had with the  
 12 City regarding the aquifer maintenance credit  
 13 proposal. Tell me, first of all, when you first  
 14 started having discussions with the City in that  
 15 regard. I think you testified that it was  
 16 approximately two years, one or two years before  
 17 the proposal was submitted?  
 18 **A. Probably.**  
 19 Q. How many conversations would you say that you've  
 20 had with the City about the proposal since?  
 21 **A. I'm -- about this proposal in front of us or how**  
 22 **many meetings did we have or what ...**  
 23 Q. My question is do you know how many meetings or  
 24 discussions you would have had with the City  
 25 about the proposal?

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1 **A. No, I can't put a number to it.**  
 2 Q. Was there any document that you're aware of that  
 3 was introduced in discovery or otherwise that  
 4 would help to elucidate how many meetings  
 5 occurred?  
 6 **A. There might be, yeah. If you're aware of some,**  
 7 **I'd look at them.**  
 8 Q. But at least as you're sitting here today,  
 9 you're not aware of a specific document that  
 10 would help to refresh your memory in that  
 11 regard?  
 12 **A. No.**  
 13 Q. Do you know when you first would have had  
 14 conversations with consultants from the City?  
 15 Would your answer be the same as far as when you  
 16 first had discussions with the City itself?  
 17 **A. We had discussions, but I can't -- I can't tell**  
 18 **you when they started. So the answer is the**  
 19 **same.**  
 20 Q. Probably about a year or two before the proposal  
 21 was submitted?  
 22 **A. Probably.**  
 23 Q. And same question, do you have any way to tell  
 24 me how many times you met with the City's  
 25 consultants or when those meetings would have

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1 occurred?  
 2 **A. You know, we provided all of our calendars to**  
 3 **you, but that's as much as I could help provide**  
 4 **to you. I mean, I think there were probably**  
 5 **agendas to those meetings and our calendars, but**  
 6 **that's as much as -- I can't tell you off the**  
 7 **top of my head.**  
 8 Q. And for time purposes, I'm not going to pull  
 9 those up right now. But if the City were to  
 10 include some calendars that -- in some of their  
 11 notebooks that reference when some of these  
 12 meetings would occur and there would be minutes  
 13 of some of those meetings, would that help to  
 14 identify when those meetings occurred?  
 15 **A. Yes, absolutely.**  
 16 Q. With respect to the chief engineer, Mr. Oleen  
 17 has highlighted a letter that was written by the  
 18 chief engineer basically indicating that the  
 19 chief engineer supported the City's proposal.  
 20 Are you aware of the letter I'm speaking of?  
 21 **A. It was either the September 18th or June 17th**  
 22 **letter.**  
 23 Q. And, in fact, there were multiple letters where  
 24 the chief engineer expressed his support of the  
 25 City's proposal; is that correct?

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1 **A. That's correct.**  
 2 Q. So as early as 2017, at least, was the chief  
 3 engineer, Mr. Barfield, expressing support for  
 4 the City's proposal?  
 5 **A. Yes.**  
 6 Q. And was this support given not just through  
 7 letters but also in the form of public  
 8 discussions and public meetings?  
 9 **A. Yes, the one public meeting in Halstead.**  
 10 Q. And I believe that you indicated in your  
 11 deposition testimony that the chief engineer,  
 12 Mr. Barfield, was heavily involved in all these  
 13 discussions that occurred regarding the City's  
 14 proposal and the City's modeling. Is that a  
 15 true statement?  
 16 **A. That's a true statement, he was involved with**  
 17 **every meeting except for the monthly status**  
 18 **meetings that Susan Metzger and I would have.**  
 19 Q. Is it true that it was in 2017 that the City and  
 20 the Division of Water Resources first  
 21 acknowledged there was a need for the aquifer  
 22 maintenance credits?  
 23 **A. Yeah, the one in -- that one letter, yes.**  
 24 Q. So at least as early as 2017, Mr. Barfield had  
 25 already opined or recognized the fact in his

1 mind that an aquifer maintenance credit was a  
2 functional equivalent of a physical recharge  
3 credit. Is that a true statement?

4 **A. Yes, that's a true statement, but he did want  
5 this hearing process to play out also.**

6 Q. Has the chief engineer, or any staff member for  
7 the Division of Water Resources for that matter,  
8 ever applied the concept of a functional  
9 equivalent in any other context?

10 **A. Not -- nothing comes to mind.**

11 Q. In other words, an example would be an irrigator  
12 comes before your department and has a new  
13 application, and the irrigator says, you know  
14 what, this application seems really, really  
15 close to what you've approved in the past, and  
16 I'll acknowledge it's just a little different  
17 but it's really close to what you've approved in  
18 the past, have you ever said with respect to an  
19 irrigator, or another applicant for that matter,  
20 that, yes, this is a functional equivalent and  
21 we're going to go ahead and approve it?

22 **A. No, but there aren't near the specifics that are  
23 in -- in that example that we have in our  
24 proposal.**

25 Q. And I understand that you're drawing a

1 **PRESIDING OFFICER:** Well, they've  
2 already been administratively noticed. Do  
3 you have a comment, Mr. Oleen?

4 **MR. OLEEN:** Just I think related to  
5 my first comment when the, maybe it was the  
6 Kansas Water Appropriation Act, a copy was  
7 offered and admitted. I don't know that  
8 these are current, updated versions, so  
9 long as no one is being bound to the laws  
10 that are copied here. They're probably  
11 correct, updated copies, but I don't know,  
12 as long as they're -- subject to that  
13 qualification, I have no objection.

14 **MR. MCLEOD:** Madam Hearing Officer,  
15 I -- I let this go the last time it was  
16 done, but it is absolutely bizarre to put  
17 laws and regulations en masse into the  
18 hearing record as exhibits. They're the  
19 laws and regulations, they've been  
20 judicially noticed, and the only  
21 conceivable purpose is to make the hearing  
22 transcript exponentially more expensive,  
23 and I object for that reason.

24 **PRESIDING OFFICER:** Any other  
25 comments?

1 distinction here, but at least as it relates to  
2 any other applicant other than the City of  
3 Wichita, you've never attempted to apply this  
4 functional equivalent concept to any other  
5 applicant; is that true?

6 **A. That's true.**

7 Q. In front of you in your exhibit notebook, which  
8 is Volume II, I will proffer for you that  
9 Exhibit 21 is the Kansas Water Appropriation  
10 Act, Exhibit 22 is the rules and regulations  
11 with regard to the Kansas Water Appropriation  
12 Act, Exhibit 23 is the Kansas Groundwater  
13 Management District's Act, K.S.A. 82a-1020,  
14 et seq., Exhibit 24 are the rules and  
15 regulations adopted with respect to GMD District  
16 No. 2. If you were to flip through those four  
17 exhibits for me, would you roughly flip through  
18 those four exhibits and see if you agree with my  
19 characterization of what those exhibits are?

20 **A. Yes, that's what they are.**

21 **MR. STUCKY:** From a house -- a  
22 housekeeping standpoint, I'd ask to move to  
23 admit those four exhibits into evidence. I  
24 know one of them has already been admitted,  
25 I'd ask to admit all four of them.

1 **MR. STUCKY:** I guess my comment is  
2 that with regard to the prior hearing, all  
3 the exhibits were scanned by the court  
4 reporter, including these particular  
5 exhibits, they've already been scanned,  
6 every one of them was scanned by the prior  
7 court reporter, and, in fact, we were all  
8 assessed charges for those exhibits being  
9 scanned. She indicated that she was going  
10 to scan the exhibits in advance.

11 And so from that standpoint, it's my  
12 viewpoint that we've already been charged  
13 for the scanning of those exhibits. And  
14 when you look at the cost of a transcript,  
15 merely scanning an exhibit is a minor cost  
16 compared to the cost of creating a record  
17 and typing up objections and things of that  
18 nature.

19 **PRESIDING OFFICER:** Mr. Oleen?

20 **MR. OLEEN:** Yes, Madam Hearing  
21 Officer, I have some particular insight on  
22 that because I recently had to deal with  
23 the former stenographer about obtaining the  
24 originals. I was told that while all of  
25 the Groundwater Management District No. 2's

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1 volumes have been scanned, I was told we  
 2 were not charged for the exhibits that have  
 3 not yet been admitted.  
 4 I was told that it would be an  
 5 additional \$995 to get the scanned copies  
 6 of the anticipated exhibits that the GMD  
 7 wants to offer. If the GMD wants to pay  
 8 that \$995, then fine, but I -- we have not  
 9 been assessed charges for the scanned but  
 10 not yet admitted exhibits as I was told and  
 11 have in some correspondence somewhere.  
 12 **PRESIDING OFFICER:** Okay. By virtue  
 13 of the fact that these have been  
 14 administratively, judicially noticed, I  
 15 don't think they need to be admitted  
 16 exhibits. So if you are using them today  
 17 for points of reference, I think that's  
 18 fine, but I don't think they need to be  
 19 formally admitted as exhibits, they're  
 20 already going to apply to this case. So to  
 21 that extent, then, I'm just going to say  
 22 21, 22, and 23 and 24 do not need to be  
 23 admitted, they already apply, they're  
 24 already noticed. So please proceed.  
 25 **MR. STUCKY:** At least for the record

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1 purposes, is it okay if I still refer to  
 2 them as exhibits numerically to make it  
 3 easy for our discussion?  
 4 **PRESIDING OFFICER:** Yes, you've  
 5 identified what they are on the record so  
 6 that's fine.  
 7 **MR. STUCKY:** And other than that, I  
 8 know they've been judicially noticed, so I  
 9 don't care particularly if they're admitted  
 10 into evidence.  
 11 **BY MR. STUCKY:**  
 12 Q. Having looked at Exhibits 21 through 24, have  
 13 you had a chance to familiarize yourself with  
 14 those statutes and regulations?  
 15 **A. I know -- yes, I know what they are.**  
 16 Q. Could you show me in those statutes and  
 17 regulations where the concept of functional  
 18 equivalent is first found in statute or  
 19 regulation?  
 20 **MR. OLEEN:** I'm going to object, I  
 21 know that it's -- it's Mr. Letourneau's,  
 22 part of his job to apply laws, but -- and  
 23 perhaps I should have objected sooner, but  
 24 Mr. Stucky is oftentimes coming close to  
 25 asking Mr. Letourneau about legal

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1 conclusions, about which he is not  
 2 qualified to opine. And I think this  
 3 question is perhaps closest to that. I  
 4 know Mr. Stucky, or his client rather,  
 5 disagrees with certain characterizations of  
 6 the laws; that's something that's more  
 7 appropriate for a legal brief, I don't  
 8 think that's appropriate for this witness's  
 9 opinion testimony.  
 10 **PRESIDING OFFICER:** You've asked  
 11 if -- asked Mr. Letourneau if any approvals  
 12 have ever been issued before based on a  
 13 functional equivalent concept, he has said  
 14 no. Because it is the purview of his job  
 15 and career to apply the regs and the laws,  
 16 I think it's fair to ask him if he has  
 17 applied anything in these documents --  
 18 well, never mind. I don't think it gets in  
 19 the realm of a legal conclusion to ask --  
 20 well, it's getting close to 5:00. Yeah.  
 21 **MR. STUCKY:** I can rephrase my  
 22 question.  
 23 **PRESIDING OFFICER:** If you would,  
 24 please.  
 25 **BY MR. STUCKY:**

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1 Q. Based on your 33 years of experience of applying  
 2 statutes and regulations to applications and  
 3 water rights, have you ever seen the  
 4 terminology, functional equivalent, in a statute  
 5 or regulation, to your knowledge?  
 6 **A. No.**  
 7 Q. And, in fact, if I were to ask you to flip  
 8 through all these statutes and regulations,  
 9 would you be able to point me to a place where  
 10 that terminology is mentioned?  
 11 **A. No.**  
 12 **MR. STUCKY:** Would you like me to  
 13 quit for the day, Madam Hearing Officer?  
 14 Was that a suggestion?  
 15 **PRESIDING OFFICER:** No, I didn't  
 16 mean to undermine your case at all. Are  
 17 you about to lead into a new line of  
 18 questioning, do you -- is this a good  
 19 stopping point? You need to tell me.  
 20 **MR. STUCKY:** I have a fair number of  
 21 more questions regarding this line of  
 22 questioning. I guess I can continue till  
 23 5:00 o'clock, and we can see where we end  
 24 up.  
 25 **PRESIDING OFFICER:** Yeah, it's ten

1 more minutes, let's do that.  
2 **BY MR. STUCKY:**  
3 Q. So would you at least agree with me that when  
4 the chief engineer wrote letters touting this  
5 concept of a functional equivalent, the chief  
6 engineer did not cite any statutory authority  
7 that specifically mentions the terminology  
8 functional equivalent, would you agree with  
9 that?  
10 **A. I would agree.**  
11 Q. And I think you already said that the chief  
12 engineer opined that the City's proposal was in  
13 the public interest, at least prior to this  
14 hearing occurring. Is that a true statement?  
15 **A. Correct.**  
16 Q. And I think that you said that part of the  
17 reason why it was in the public interest, and  
18 both Mr. Oleen and Mr. McLeod helped to  
19 illuminate this point, but your opinion was that  
20 Mr. Barfield believed it was in the public  
21 interest because it would have kept the aquifer  
22 full more of the time. Is that -- was that the  
23 testimony?  
24 **A. That's correct.**  
25 Q. Other than the City's desire or stated purpose

1 of keeping the aquifer full more of the time,  
2 are you aware of other ways that the City's  
3 proposal would be in the public interest?  
4 **A. Well, it's in -- well, no, it's in the public  
5 interest to manage the groundwater full, to  
6 manage the aquifer full.**  
7 Q. At least with regard to the letters that were  
8 written by the chief engineer, Mr. Barfield, or  
9 based on statements that Mr. Barfield made, did  
10 he identify any other ways in which the City's  
11 proposal was in the public interest?  
12 **A. I'd have to review the letters.**  
13 Q. I'll give you a moment to do so.  
14 **A. Okay. Yeah, looking really quickly at them,  
15 nothing sticks out at me, but it's -- it's  
16 managing the aquifer full is what we feel is in  
17 the public interest. Having a full aquifer  
18 moving into a 1 percent drought.**  
19 Q. So, for example, in the first letter, it states  
20 that AMCs should serve the public interest by  
21 facilitating fuller aquifer conditions, in the  
22 third paragraph, for example?  
23 **A. That -- that's there, yes.**  
24 Q. And if you were to review those letters, the  
25 reason that the City's proposal is touted as

1 benefitting the aquifer and being in the public  
2 interest is because it keeps the aquifer fuller;  
3 is that true?  
4 **A. That's true.**  
5 Q. And, in fact, those letters don't specifically  
6 identify any other reason why the City's  
7 proposal is in the public interest. Would that  
8 also be true?  
9 **A. That -- yes.**  
10 Q. Aside from those letters that have been  
11 introduced into evidence by Mr. Oleen, are you  
12 aware of anything else that Mr. Barfield would  
13 have stated with regard to how the City's  
14 proposal was in the public interest, or was it  
15 only the fact that it kept the aquifer levels  
16 full?  
17 **A. Only the aquifer levels full that I'm aware of.**  
18 Q. And just so I'm clear on what we're talking  
19 about with respect to keeping the aquifer levels  
20 full, what we're talking about is the fact that  
21 the aquifer could be kept full while the City  
22 accumulated an aquifer maintenance credit; is  
23 that correct?  
24 **A. That's correct.**  
25 Q. As you're sitting here today, are you aware of

1 conversations you would have had with any other  
2 employee of the Division of Water Resources  
3 where they would have expressed another way in  
4 which the City's proposal is in the public  
5 interest?  
6 **A. I -- maybe, I can't think of one off the top of  
7 my head.**  
8 Q. Well, off the top of your head, either based on  
9 what's been expressed to you by another employee  
10 of the Division of Water Resources or based on  
11 your own knowledge, are you aware of a way that  
12 the City -- City's proposal is in the public  
13 interest other than keeping the aquifer full  
14 while the AMCs are accumulated?  
15 **A. No.**  
16 Q. Would you also agree with me that the Division  
17 of Water Resources did not analyze any  
18 individual well logs as it relates to the City's  
19 proposal?  
20 **A. That's true.**  
21 Q. Would you also agree that the Division of Water  
22 Resources never performed any well testing to  
23 try and help verify the City's proposal?  
24 **A. That's true.**  
25 Q. And there were so many objections that I'm not

1 sure I asked this or not, but you would also  
 2 agree that the Division of Water Resources did  
 3 not conduct any kind of independent modeling or  
 4 measurements with regard to the City's proposal?  
 5 **A. I can't -- I can't state independent modeling,**  
 6 **I'm not sure, but I don't -- but we did not do**  
 7 **any measurements.**  
 8 Q. But with respect to independent modeling, I  
 9 think you read an answer to one of your  
 10 interrogatories, and I can pull it back up, but  
 11 wasn't your testimony that there was no  
 12 independent modeling that was performed by the  
 13 Division of Water Resources?  
 14 **A. That's my understanding, but I'm -- I don't know**  
 15 **exactly what the team did when they reviewed it.**  
 16 Q. Did you personally review any literature to help  
 17 you understand the City's proposal?  
 18 **A. No, not other than the proposal.**  
 19 Q. So your opinions today are based on having read  
 20 the proposal itself?  
 21 **A. Yes, and that -- the table that showed the**  
 22 **proposal and then the maps that showed the**  
 23 **result.**  
 24 **MR. STUCKY:** I'm ready to shift to a  
 25 new line of questioning. I notice that

1 it's one minute till 5:00, would you like  
 2 me to proceed, or is this a good stopping  
 3 point?  
 4 **PRESIDING OFFICER:** This is a good  
 5 stopping point. It's 5:00 o'clock now, we  
 6 will recess until 9:00 o'clock tomorrow  
 7 morning.  
 8 (Whereupon, the proceedings were  
 9 adjourned at 5:00 p.m.)  
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1 C E R T I F I C A T E  
 2 STATE OF KANSAS )  
 3 SEDGWICK COUNTY ) ss:  
 4 I, Nancy L. Rambo, a Certified Shorthand  
 5 Reporter, within and for the State of Kansas, do  
 6 hereby certify that the foregoing is a true and  
 7 correct transcript of the proceedings had at the  
 8 time and place hereinbefore set forth.  
 9 I further certify that I am not a relative  
 10 or employee or attorney or counsel of any of the  
 11 parties, nor am I a relative or employee of such  
 12 attorney or counsel, nor am I financially  
 13 interested in the action.  
 14 WITNESS my hand and official seal at  
 15 Wichita, Sedgwick County, Kansas, this 22nd day of  
 16 February, 2020.  
 17  
 18  
 19 NANCY L. RAMBO, R.P.R., C.S.R.  
 20 Registered Professional Reporter  
 21 Certified Shorthand Reporter  
 22  
 23  
 24 Costs:  
 25



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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage v*

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*Formal Hearing - Volume VI*  
*February 12, 2020*

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STATE OF KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the City )  
of Wichita's Phase II ) Case No.  
Aquifer Storage and ) 18 WATER 14014  
Recovery Project in Harvey )  
and Sedgwick Counties, )  
Kansas, )  
Pursuant to K.S.A. 82a-1901  
and K.A.R. 5-14-3a

FORMAL HEARING  
VOLUME VI

This matter came on for Formal Hearing before Constance C. Owen, Presiding Officer, at the First Mennonite Church, 427 West Fourth, Halstead, Harvey County, Kansas, commencing at 8:59 a.m., on the 12th day of February, 2020.

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A P P E A R A N C E S

City of Wichita, Department of Public Works and Utilities, appears by their attorney, Brian K. McLeod, Deputy City Attorney, 435 North Main, 13th Floor, Wichita, Kansas 67202.

Equus Beds Groundwater Management District No. 2 appears by their attorneys, Thomas A. Adrian and David J. Stucky, Adrian & Pankratz, 301 North Main, Suite 400, Newton, Kansas 67114. Also present was Tim Boese.

Division of Water Resources appears by their attorneys, Aaron B. Oleen and Stephanie Murray, Kansas Department of Agriculture, 1320 Research Park Drive, Manhattan Kansas 66502.

Intervenors appear by their attorney, Tessa M. Wendling, 1010 Chestnut Street, Halstead, Kansas 67056.

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LANE LETOURNEAU

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**PRESIDING OFFICER:** Okay. We're back on the record. It is 9:00 a.m. on February 12, 2020, and we are still at the First Mennonite Church in Halstead, Kansas, continuing the hearing for City of Wichita's request to modify their ASR Phase II project. And I believe we were having cross-examination of Mr. Letourneau by Mr. Stucky.

**CROSS-EXAMINATION (Cont.)  
BY MR. STUCKY:**

Q. Mr. Letourneau, yesterday we had a discussion about multi-year flex accounts. Is there -- was there a recent study completed by the Division of Water Resources with respect to multi-year flex accounts and their effects on water usage?

**A. Yes. As a matter of fact, each year we're required by the legislature to provide an annual report on the multi-year flex accounts. And so the chief engineer, he actually asked Sam Perkins and others to look at the water use before multi-year flex accounts and after multi-year flex accounts. And, actually, it's not published yet, but it's good data. We found**

1 **out that really it's -- the net effect is the**  
2 **same on -- in a multi-year flex account or out**  
3 **of a multi-year flex account, we found that the**  
4 **net effect is the same.**

5 Q. So in other words, during at least the five-year  
6 window when a multi-year flex account is in  
7 place versus the five-year window when a  
8 multi-year flex account is not in effect, the  
9 water usage during that five-year window was the  
10 same, is that what you found?

11 **A. That's correct. And these are all irrigation**  
12 **rights that are in a multi-year flex account.**

13 Q. Yesterday I also asked you about K.A.R.  
14 5-22-14(f) and the 20-year window for municipal  
15 planning. Do you recall that?

16 **A. Yes.**

17 Q. We discussed the fact that in an appropriation  
18 application for municipal use, the projected  
19 water use demand can be based on a maximum  
20 20-year projection window, and we contrasted  
21 that regulation to the 40 years of water demand  
22 projection that the City brought before us  
23 today. Do you recall that?

24 **A. Yes.**

25 Q. When I asked you to explain how the City could

1 Q. So if we mention cities such as Olathe and  
2 Manhattan, just so we have a clear record, we're  
3 comparing apples and oranges in the sense that  
4 they're not part of the Equus Beds Groundwater  
5 Management District, correct?

6 **A. They're not located within the Groundwater**  
7 **Management District, but they're still a large**  
8 **municipality.**

9 Q. But not subject to the regulation we just talked  
10 about, correct?

11 **A. That's correct.**

12 Q. Additionally, are you aware of the situation  
13 with respect to the City of Maize where they  
14 asked to project out further than 20 years and  
15 it was denied both by the GMD2 and by the  
16 Division of Water Resources?

17 **A. Yes, I do recall Maize, we -- we went with the**  
18 **GMD's recommendation. When I say we, Division**  
19 **of Water Resources accepted the GMD's**  
20 **recommendation.**

21 Q. So with respect to the Chinese wall that  
22 Mr. Oleen asked you about yesterday, first of  
23 all, how were the decisions made as far as who  
24 would be on a given team and who wouldn't be on  
25 a given team?

1 now plan for 40 years, you indicated that after  
2 the first 20 years, the City could extend its  
3 perfection period by another 20 years. Do you  
4 recall that?

5 **A. Yes, absolutely.**

6 Q. However, just to clarify, while the perfection  
7 period may be extended to allow a city to meet  
8 the initial projected demands, a city is not  
9 allowed to ask for additional water after the  
10 first 20 years have past and change the initial  
11 projections, correct?

12 **A. That's correct.**

13 Q. When Mr. --

14 **A. You know, you had asked me yesterday about how**  
15 **many cities do a projection, and if appropriate,**  
16 **Doug Schemm reminded me, who works new**  
17 **applications, we've had Olathe, WaterOne,**  
18 **Manhattan, a number of larger municipalities ask**  
19 **for -- they do a 40-year projection when they do**  
20 **their new applications. And I didn't know that**  
21 **yesterday, but I know that now.**

22 Q. And just to clarify the record, K.A.R. -- the  
23 K.A.R. I just cited is part of the GMD2  
24 regulations, correct?

25 **A. Absolutely.**

1 **A. I'd have to say David Barfield and Kenny Titus,**  
2 **chief engineer and chief legal counsel, were the**  
3 **ones that established the teams.**

4 Q. And is it similar to picking teams in sports,  
5 Mr. Barfield was able to kind of have a lottery  
6 of who he wanted on his team and then  
7 essentially pick some people for another team,  
8 or was there a more involved process to decide  
9 who was on which team?

10 **A. Well, I think it actually had to do with our**  
11 **technical roles in this is what David looked at.**

12 Q. And explain what you mean by looking at  
13 technical roles.

14 **A. Well, David felt appropriate to -- this is what**  
15 **I think, that David felt appropriate to keep the**  
16 **modelers on his team for reviewing any type of**  
17 **technical modeling questions.**

18 Q. And so after this Chinese wall was created, all  
19 the modelers that worked for DWR were  
20 essentially on Mr. Barfield's team?

21 **A. All but Ginger Pugh and Ginger Pugh is on our**  
22 **team. But Ginger came in late -- early in her**  
23 **career but late in our process, if that makes**  
24 **sense. She doesn't have a lot of experience**  
25 **with this particular project.**

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1 Q. So in other words, as Mr. Barfield picked the  
 2 teams, he took the modelers that were involved  
 3 in the process from the beginning and the  
 4 experienced modelers and left you with the  
 5 modeler that had less experience with the  
 6 modeling?  
 7 **A. That's correct.**  
 8 Q. And so after that decision was made, does it  
 9 suffice to say that at least the number of  
 10 modelers that you had and the experience of  
 11 those modelers was limited after that decision  
 12 was made? From your standpoint?  
 13 **A. Yes, but the modeling, I mean, as far as my**  
 14 **program, the modeling was accepted by that team,**  
 15 **therefore accepted by our program, I mean, as**  
 16 **laid out in the chief engineer's letters.**  
 17 Q. And I guess I'm also maybe not clear how that  
 18 works, so the way this can work is if a given  
 19 modeling team accepts a model right before this  
 20 Chinese wall is created, they can quick submit  
 21 their thoughts to the other team, and then after  
 22 that, they don't communicate anymore, is that  
 23 how it works?  
 24 **A. We didn't communicate after the wall was built.**  
 25 **We haven't communicated at all.**

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1 Q. I guess what I'm trying to understand is the  
 2 modelers who at least gave some input on the  
 3 City's modeling and proposal, after the Chinese  
 4 wall was developed, you didn't have any further  
 5 conversation with them about the model?  
 6 **A. No. No.**  
 7 Q. And, in fact, to the extent that they would have  
 8 done further work on the model after this  
 9 Chinese wall of sorts was created, you wouldn't  
 10 know if they did further work, right?  
 11 **A. No, we don't talk about it at all.**  
 12 Q. Before the Chinese wall was created and the  
 13 discussions were occurring collectively, was --  
 14 were the consultants for the City part of a  
 15 collective group with DWR that was discussing  
 16 the proposal? I think you said yesterday that  
 17 the answer was yes?  
 18 **A. Yes.**  
 19 Q. After the Chinese wall was created, and I'm  
 20 going to refer to two teams.  
 21 **A. Yes.**  
 22 Q. I'm going to refer to Mr. Letourneau's team and  
 23 Mr. Barfield's team, if you will, just for  
 24 simplicity.  
 25 **A. Sure.**

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1 Q. After the Chinese wall was created, were the  
 2 City's consultants still conversing with  
 3 Mr. Letourneau's team?  
 4 **A. Yes.**  
 5 Q. After the Chinese wall was created, were the  
 6 City's consultants still communicating with  
 7 Mr. Barfield's team?  
 8 **A. No. I mean, they're not supposed to be.**  
 9 **Dave -- the chief engineer's team is Chinese**  
 10 **walled off from everyone at this point.**  
 11 Q. Same question with respect to the City of  
 12 Wichita, after this Chinese wall was created,  
 13 was the City of Wichita communicating with  
 14 Mr. Letourneau's team?  
 15 **A. Yes.**  
 16 Q. After this Chinese wall was created, was the  
 17 City of Wichita communicating with  
 18 Mr. Barfield's team?  
 19 **A. They shouldn't have been. I mean, but**  
 20 **Barfield's team is not communicating to me at**  
 21 **all, so I don't know what communications they've**  
 22 **had, but they're not supposed to be.**  
 23 Q. And I guess I want to just understand a little  
 24 bit better internally from an agency perspective  
 25 how this Chinese wall works. So, for example,

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1 let's say that you're headed to the restroom in  
 2 the DWR offices and you meet up with  
 3 Mr. Barfield in the restroom, could you say to  
 4 him, that Mr. Stucky sure is getting on my  
 5 nerves with respect to this DWR project with the  
 6 City of Wichita, is that a conversation you  
 7 could have?  
 8 **A. No.**  
 9 **MR. OLEEN:** I object to --  
 10 **A. No.**  
 11 **MR. OLEEN:** I object --  
 12 **A. Okay.**  
 13 **MR. OLEEN:** -- to this line of  
 14 questioning because I think this goes  
 15 really to the previous motion that GMD2  
 16 filed to try to disqualify any DWR  
 17 testimony on the basis of some sort of  
 18 impropriety and connection with the chief  
 19 engineer. We've had this discussion about  
 20 the fact that there were these Chinese  
 21 walls and DWR didn't violate that and they  
 22 tried to claim that DWR had and, therefore,  
 23 this whole process was tainted. I -- I  
 24 don't think this is a good usage of our  
 25 time with this line of questioning.

1 **PRESIDING OFFICER:** Mr. Stucky.  
2 **MR. STUCKY:** Madam Hearing Officer,  
3 in his direct examination, Mr. Oleen asked  
4 about the Chinese wall. If he hadn't asked  
5 about this Chinese wall in his direct  
6 examination and it wasn't part of the  
7 deposition transcript at all, I would maybe  
8 concede that this line of questioning is  
9 outside the scope of this hearing, but  
10 Mr. Oleen specifically talked about the  
11 Chinese wall and elaborated on it in his  
12 direct examination.  
13 **PRESIDING OFFICER:** I think in lieu  
14 of the fact that you asked about it, plus  
15 even though I believe I understand the  
16 landscape of what is being called a Chinese  
17 wall, future entities after me that may be  
18 reviewing this record may not understand as  
19 clearly, so it may be helpful to have this  
20 explained in the record. So I'm curious to  
21 see where you're going with this, but for  
22 now we'll let it go.  
23 **BY MR. STUCKY:**  
24 Q. Just a moment ago, I asked you about the extent  
25 to which you could communicate about the ASR or

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1 the AMC project with the chief engineer and his  
2 team. And my question was whether or not you  
3 could even joke about it on a surface level or  
4 talk about it in any fashion?  
5 **A. We -- we don't. And to give you an example, I**  
6 **was in Topeka in same -- sharing a same**  
7 **multi-desk office with Kenny Titus, and Aaron**  
8 **needed to call me to talk about this hearing,**  
9 **and I had to put off that phone call because**  
10 **Kenny's in there. Now, Kenny would only hear**  
11 **one half of the conversation, but that is one**  
12 **thing that we are, I have to say, are very**  
13 **respectful of and very good about is we --**  
14 **that's one thing that we never want to mess up**  
15 **one of these hearings by goofing up and talking**  
16 **about the Chinese wall, we don't joke about the**  
17 **Chinese wall, so we respect that fully.**  
18 Q. But also are you -- is your testimony that you  
19 wouldn't talk about the subject matter of this  
20 hearing between the teams at all?  
21 **A. No, we -- we don't, we don't even talk about ASR**  
22 **other than we're going to an ASR hearing.**  
23 **That's as far as we take it.**  
24 Q. After the decision was made to appoint Ms. Owen  
25 as the new hearing officer, at that point, is

1 that when the Chinese wall was created? I was  
2 unclear with the timeline.  
3 **A. No, it was created right after the public**  
4 **hearing in Halstead -- the public meeting, I'm**  
5 **sorry. There was a public meeting in Halstead,**  
6 **and at that time, I believe, is when the Chinese**  
7 **wall was created. And then after -- and then to**  
8 **go on, when Ms. Owen was appointed the hearing**  
9 **officer, Kenny Titus, then, said, the Chinese**  
10 **wall is still there, we still can't talk about**  
11 **this thing.**  
12 Q. So in other words, before the decision was made  
13 to appoint a new hearing officer, the Chinese  
14 wall was already being put into effect?  
15 **A. Yes. Yes. Now, I have to be honest, in the**  
16 **very beginning when the Chinese wall was put in**  
17 **effect, if somebody tried to say something to**  
18 **one another, we would remind ourselves that**  
19 **there is a Chinese wall. So there could have**  
20 **been a day or so before it became fully**  
21 **implemented, but there would be no -- nothing**  
22 **talked about, you know. Something start -- if**  
23 **one of us started to say something, the other**  
24 **one would say, there's a Chinese wall so ...**  
25 Q. Yesterday there was some questions asked about

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1 errors in the City's model and also in previous  
2 days, and you've been sitting through this  
3 hearing and listening to those questions,  
4 correct?  
5 **A. Correct.**  
6 Q. And for everybody's benefit, I'm not going to go  
7 through those errors in any kind of detail  
8 again, but just would it suffice to say that you  
9 heard the 110 percent error with respect to  
10 Cheney?  
11 **A. Yes.**  
12 Q. And that was an error in table 2-3?  
13 **A. Correct.**  
14 Q. And there was also some errors that we discussed  
15 in table 2-5, correct?  
16 **A. Correct.**  
17 Q. And there was also some errors that we discussed  
18 in table 2-10, correct?  
19 **A. Correct.**  
20 Q. And in addition, when Mr. McCormick was  
21 testifying, he indicated that there was an error  
22 with respect to the 85 percent versus the 73  
23 percent and what now is closer to 64 percent.  
24 Do you recall that discussion as well?  
25 **A. That's correct.**

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1 Q. When you were in college, did you have the  
 2 occasion to take any statistics courses?  
 3 **A. I did not.**  
 4 Q. So if I were to ask you from a statistical  
 5 standpoint what the concept of reliability and  
 6 validity are with respect to statistics, would  
 7 you have an answer to that?  
 8 **A. No, I would not.**  
 9 Q. However, yesterday you indicated that -- a term  
 10 of art that you used yesterday was the term  
 11 reasonable, that things seemed reasonable, you  
 12 used that terminology yesterday; is that -- is  
 13 that correct?  
 14 **A. That's correct.**  
 15 Q. As you listened to the discussion unfold and we  
 16 caught a number of errors and they unfolded in  
 17 real time in the hearing, did that cause you any  
 18 concern as you were sitting back and listening?  
 19 **A. Not the typographical errors, no, we -- and**  
 20 **we'll look at the magnitude of the errors to see**  
 21 **if the percentages change the overall outcome**  
 22 **very much, but we -- by the end of this process,**  
 23 **I mean, I appreciate the fact we've gone**  
 24 **through, we've identified the errors, we will**  
 25 **have a corrected -- a corrected proposal; it**

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1 **won't be a brand-new proposal but a corrected**  
 2 **one as a result of this process.**  
 3 Q. So in other words, would it have mattered how  
 4 many errors were discovered in the proposal,  
 5 would you have still found that the proposal  
 6 seemed reasonable?  
 7 **A. I don't know until we -- until the corrections**  
 8 **happen and we let our team look at it, then**  
 9 **we'll be -- some of the errors didn't seem that,**  
 10 **you know, that gross, I'll say, but I don't**  
 11 **think that overall it's going to change the**  
 12 **proposal that much.**  
 13 Q. I used the -- I think I said great concern a  
 14 moment ago. Would you agree that each time you  
 15 look at a data set or a model and you discover  
 16 an error that it, at least, would cause you some  
 17 concern?  
 18 **A. Oh, yeah, sure, you'd want to look at it,**  
 19 **definitely.**  
 20 Q. So by changing my terminology and not putting  
 21 words in your mouth with respect to great  
 22 concern, would you at least agree with me that  
 23 as these errors unfolded in real time, it caused  
 24 you some concern?  
 25 **A. Yes, I mean, to where we definitely want to**

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1 **review it.**  
 2 Q. I think in front of you there's a black notebook  
 3 that has the City's proposal in it.  
 4 **MR. STUCKY:** May I approach the  
 5 witness?  
 6 **PRESIDING OFFICER:** Yes.  
 7 **BY MR. STUCKY:**  
 8 Q. Mr. Letourneau, you have before you what was  
 9 previously marked as the City's Exhibit 1, and  
 10 do you recognize that as the City's proposal  
 11 that's before us here today?  
 12 **A. Yes. Yes.**  
 13 Q. I would ask that you flip with me to page 3-1 of  
 14 the City's proposal. And please let me know  
 15 when you're on that --  
 16 **A. I'm there, David.**  
 17 Q. Near the top of page 3 point -- or 3-1, there's  
 18 a third sentence, could you read for the record  
 19 where it starts, the operational shift, could  
 20 you start to read that sentence and I'll stop  
 21 you at a point?  
 22 **A. The operational shift to use more surface water**  
 23 **has resulted in the savings of over 400,000**  
 24 **acre-feet of groundwater since 1993.**  
 25 Q. Okay. I'd ask that you stop there and not

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1 continue with the next sentence. Can you tell  
 2 me how this calculation of a savings of 400,000  
 3 acre-feet was derived, do you know?  
 4 **A. No. I mean, I don't know how Burns & McDonnell**  
 5 **or the City did it, but, I mean, you could look**  
 6 **at the water use records from the Equus Beds**  
 7 **well field to make that determination.**  
 8 Q. So in other words, you don't know if the City's  
 9 reduced groundwater usage helped restore the  
 10 water levels in the aquifer in the City's well  
 11 field, you haven't looked at data in that  
 12 regard?  
 13 **A. Well, I mean, the data's there. Yeah, the --**  
 14 **the data is all there, I mean, our whole team**  
 15 **would have looked at that.**  
 16 Q. It indicates in the proposal on the next page  
 17 that earlier -- at an earlier point in time, and  
 18 it doesn't -- it just says prior to the  
 19 implementation of the City's proposal -- or the  
 20 City's use, I think, of the -- of their  
 21 integrated local water supply plan, and I'm  
 22 unsure exactly what the date was, but it says on  
 23 that next page that the Equus Beds Aquifer  
 24 supplied 60 to 70 percent of the City's annual  
 25 municipal water supply. Do you see where I was

1 reading on the next page?

2 **A. I see that.**

3 Q. So at least prior to the implementation of this  
4 integrated local water supply plan, 60 to  
5 70 percent of the City's water was coming from  
6 the Equus Beds well field, is that what the  
7 proposal states?

8 **A. Yes.**

9 Q. So in other words, prior to 1993, was the fact  
10 that the City was using more water from the  
11 Equus Beds well field, is that part of what was  
12 causing depletion in the aquifer?

13 **A. Yes.**

14 Q. Now I'd like to turn to the concept of aquifer  
15 maintenance credits. Yesterday Mr. McLeod asked  
16 about the City being with -- forced to withdraw  
17 credits sooner if minimum index levels were left  
18 the same as they are now. Do you recall that  
19 discussion that was asked of you?

20 **A. I do.**

21 Q. Can you explain for me again why the City would  
22 be forced to withdraw their credits sooner if  
23 the minimum index level was left the same? It's  
24 a complex concept, and I want to make sure I  
25 understood exactly what you said in that regard.

1 after the levels have dropped below the 1993  
2 levels, is there any other restriction in the  
3 existing ASR Phase I or ASR Phase II documents  
4 that would otherwise require the City to  
5 withdraw their credits sooner rather than later  
6 as it approaches that current minimum index  
7 level?

8 **A. Not that I'm aware of.**

9 Q. So in other words, this hypothetical we're  
10 talking about where the City may be forced to  
11 withdraw their credits sooner, that's merely a  
12 hypothetical in the sense that there's no  
13 requirement that would dictate when the City  
14 would withdraw those credits other than the  
15 minimum established by that minimum index level?

16 **A. That's my understanding.**

17 Q. Would it be good and responsible -- well,  
18 yesterday we talked about responsible resource  
19 management, that was a term, I believe, you used  
20 yesterday; is that correct?

21 **A. Correct.**

22 Q. Would it be good or responsible resource  
23 management if the City withdrew their credits  
24 sooner than they would have otherwise had to?

25 **A. No, because it's better for the City to leave**

1 **A. If the water level is drawn below the minimum**  
2 **index cell level, the City cannot recover their**  
3 **recharge credits. So if the aquifer is getting**  
4 **close to that level, the City would not -- if**  
5 **they needed those recharge credits, they would**  
6 **have to divert those recharge credits before the**  
7 **water level got below that index cell level.**

8 **And so in 2011 and 2012, we were getting**  
9 **extremely close to that level and the City felt**  
10 **that they would -- they would strand those**  
11 **recharge credits. So now their planning horizon**  
12 **changes, they have to make a decision whether to**  
13 **divert those recharge credits before it gets to**  
14 **that lower level, and then below the lower**  
15 **level, then, they would start using their native**  
16 **water rights.**

17 Q. So in other words, if it was getting closer to  
18 that level, it would cause the City to choose to  
19 withdraw their credits sooner is what you're  
20 saying?

21 **A. They would have to make a decision on whether to**  
22 **draw the credits or leave them stranded in the**  
23 **aquifer.**

24 Q. Let me ask you this: Is there any rule other  
25 than the fact that they can't recover credits

1 **the credits in the aquifer because those credits**  
2 **don't renew. So it -- but if it was getting --**  
3 **if they were -- the City's planning required**  
4 **them to use recharge credits or go over their**  
5 **40,000 acre-feet, that minimum index level may**  
6 **require them to draw recharge credits until it**  
7 **gets below that and then they would utilize the**  
8 **40,000 acre-feet.**

9 Q. Yesterday you indicated that if the minimum  
10 index level was dropped, the City would then  
11 conceivably wait longer to withdraw those  
12 credits. Do you recall that testimony?

13 **A. Yes, that gives them a little bit more window to**  
14 **operate with.**

15 Q. My question is this: Where in the existing  
16 proposal does it explain or dictate that the  
17 City would actually be required to wait longer  
18 to withdraw those credits?

19 **A. I'd have to review the proposal, I'm not -- I**  
20 **don't know off the top of my head.**

21 Q. Well, in other words, would you agree with me  
22 that as the proposal is currently written, there  
23 is no strict requirement that would force the  
24 City to wait to a certain period of time or wait  
25 until the water level has dropped a certain

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1 amount to withdraw those credits, would you  
 2 agree with me on that?  
 3 **A. Yes, and -- but that's why in our testimony we**  
 4 **came up with the draft conditions on the order**  
 5 **on which the rights and the recharge credits**  
 6 **would be pumped.**  
 7 Q. And certainly I'll ask you about the proposed  
 8 conditions that DWR has made in great detail  
 9 here in a minute, but would you at least just  
 10 agree with me for our initial purposes that as  
 11 the proposal's written, there is no condition  
 12 that would dictate how and when the City would  
 13 withdraw those credits? In fact, there's  
 14 nothing that would require them to get them  
 15 sooner or wait longer, would you agree with  
 16 that?  
 17 **A. Just a second, I think -- I thought there was**  
 18 **something in here that talked about the order in**  
 19 **which they would take them in. Just a second.**  
 20 **Okay. On -- on page 2-5, at the top, let me**  
 21 **know -- are you there?**  
 22 Q. I am there.  
 23 **A. You'll see that bullet point that talks about**  
 24 **updated outcome-based goals, and the third**  
 25 **bullet there talks about utilizing the 40,000**

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1 **acre-feet from the Equus Beds well field prior**  
 2 **to use -- prior to use of the ASR recharge**  
 3 **credits. So it -- this was discussed.**  
 4 Q. Mr. Letourneau, when one -- well, just keep your  
 5 finger on that page --  
 6 **A. Okay.**  
 7 Q. -- on page 2-5. I would ask that you also,  
 8 then, flip to page -- page 3-6 of the City's  
 9 proposal. Sorry it took me a moment, I had it  
 10 covered up with sticky notes.  
 11 **A. It's tricky, I mean -- okay, I'm there.**  
 12 Q. Would you agree that on page 3-6 of the  
 13 proposal, and it starts on the prior page, 3-5,  
 14 it says, proposed AMC permit conditions? Would  
 15 you agree with me?  
 16 **A. What -- what number are you at?**  
 17 Q. Well, on page 3-5, the section that's --  
 18 **A. Oh, yep, I'm there.**  
 19 Q. -- 3.4, it says proposed AMC permit conditions,  
 20 would you agree with me that's what it says?  
 21 **A. Yes.**  
 22 Q. And would you agree that there's numerical -- a  
 23 numerical order of conditions on the very next  
 24 page that are listed as 1 through 7, would you  
 25 agree with me?

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1 **A. Yes.**  
 2 Q. And just take a moment to scan those conditions  
 3 over just for a moment.  
 4 **A. Okay.**  
 5 Q. Would you at least agree that there's no  
 6 requirement listed in these conditions that  
 7 would force the City to withdraw water from  
 8 Cheney --  
 9 **MR. MCLEOD:** I'm going to object at  
 10 this point, I think we crossed lines of  
 11 questioning. We've transitioned from  
 12 talking about the 1993 bottoms and the  
 13 order in which credits would be used as  
 14 compared to native rights, then come over  
 15 to the AMC suddenly, permit conditions, and  
 16 it's apples and oranges.  
 17 **MR. STUCKY:** That's fair. I'll  
 18 change my line of questioning, that's a  
 19 fair objection.  
 20 **BY MR. STUCKY:**  
 21 Q. The -- would you agree, though, on 3-5, what we  
 22 see on 3-5 of the City's proposal are  
 23 conditions, those are actual conditions that the  
 24 City is asking that they have to abide by; is  
 25 that correct?

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1 **A. Well, they're proposed conditions.**  
 2 Q. But they're conditions the City is saying that  
 3 if our proposal is adopted, we're asking that  
 4 these conditions be imposed on us. Is that a  
 5 true statement?  
 6 **A. That's -- I would think that's true, yes.**  
 7 Q. Now, if you kept your finger on the page you  
 8 identified before, which was page 2-5.  
 9 **A. Yes.**  
 10 Q. At the top of that page, it says outcome-based  
 11 goals; is that right?  
 12 **A. Yes.**  
 13 Q. Would you agree with me, at least for the  
 14 record, that there's a big difference between a  
 15 goal and a condition, from your perspective in  
 16 your job?  
 17 **A. Yes. But then in our proposed conditions, we**  
 18 **actually put this particular goal of the City in**  
 19 **as a condition.**  
 20 Q. So that's a condition you're asking for, but at  
 21 least in the City's proposal, it's not made a  
 22 condition in the City's proposal. Is that a  
 23 true statement?  
 24 **A. Not on that particular page, but at the end of**  
 25 **the day, it'll be a condition.**

1 Q. I would ask that you now flip to page 3-10 of  
2 the City's proposal. Under section 3.6, there  
3 is a sentence that starts, the added  
4 flexibility. Do you see --

5 **A. Yes.**

6 Q. Could you read for the record, starting with  
7 that sentence and those four bullet points that  
8 are listed in that section?

9 **A. The added flexibility granted by AMCs would**  
10 **City (sic) would reinforce the City's**  
11 **commitments outcome-based management of the**  
12 **water resources: The City of Wichita remains**  
13 **committed to optimizing the use of all available**  
14 **water supply resources, both in times of**  
15 **abundance and times of drought; the City remains**  
16 **committed to making water resource management**  
17 **practices that are governed by outcome-based**  
18 **results focused on long-term sustainability of**  
19 **all water supplies; the City will continue to**  
20 **maintain an ASR operational priority focused on**  
21 **generation of physical recharge credits where**  
22 **and when possible; the ability to develop and**  
23 **recover AMCs results in an aquifer management**  
24 **strategy focused on maintaining the maximum**  
25 **quantity of water possible in aquifer storage**

1 could be crafted into actual commitments of the  
2 City or conditions of the City, would you agree  
3 that these are items that would be best crafted  
4 into conditions that the City would have to  
5 abide by?

6 **A. Yes, I think it's good. I mean, they've**  
7 **committed to them.**

8 Q. I'd ask that you turn to page 3-10 of the City's  
9 proposal. Or, I'm sorry, 3-1 of the City's  
10 proposal. In that bottom paragraph, could you  
11 read to me the second sentence of that bottom  
12 paragraph?

13 **A. The water left in storage because of utilizing**  
14 **Little Ark River flows rather than groundwater**  
15 **from the Equus Beds well field would be**  
16 **considered an ASR aquifer maintenance credit,**  
17 **AMC, with similar characteristics to the current**  
18 **ASR recharge credits.**

19 Q. So the idea as identified in that sentence is  
20 that an aquifer maintenance credit would be  
21 accumulated based on the act of the water being  
22 left in storage, is that what this sentence is  
23 saying?

24 **A. Correct.**

25 Q. And the water that is left in storage, this

1 **within the Equus Beds well field.**

2 Q. With respect to the first bullet point, one of  
3 the goals or outcomes of the City's proposal  
4 that they identify is that it would optimize the  
5 use of all available water supply resources. Is  
6 that a true or accurate statement?

7 **A. That is true, yep.**

8 Q. And, in fact, they also indicate in the next  
9 goal that they would want to ensure a long-term  
10 sustainability of all available water supplies,  
11 is that a -- what the next goal states?

12 **A. Yes.**

13 Q. And the third goal also indicates the physical  
14 recharge credits would be utilized where and  
15 when possible, is that also what's stated?

16 **A. That's correct.**

17 Q. But would you also agree with me that while  
18 although these are perceived benefits or goals  
19 of this outcome-based approach of the City's  
20 proposal, these aren't conditions; is that  
21 right?

22 **A. That's correct.**

23 Q. Now, I know that each of these goals is -- is  
24 amorphous in nature and would be difficult to  
25 enforce in the abstract, but to the extent they

1 would be native groundwater; is that correct?

2 **A. Not if it was an aquifer maintenance credit.**

3 Q. Well, explain what you mean by that.

4 **A. Well, the City has the ability to pump the hole,**  
5 **let's say in the basin storage area, and so like**  
6 **the City has committed, they want to do physical**  
7 **recharge credits first. So if the water level**  
8 **is too high to put a physical recharge credit**  
9 **in, then they gain an aquifer maintenance**  
10 **credit. And so by not pumping the aquifer,**  
11 **then, is why they get that credit. So the**  
12 **water, though, is in the basin storage area,**  
13 **physically there, but when they get the water**  
14 **maintenance credit, we flip what that water is**  
15 **to a credit, if that makes sense.**

16 Q. Let me just ask you this so I understand it  
17 clearly, let's use the example of when the City  
18 pumps the hole in the aquifer.

19 **A. Okay.**

20 Q. If they pump the hole in the aquifer, would they  
21 be pumping native water that already exists in  
22 the aquifer?

23 **A. That or a recharge credit that they've already**  
24 **accumulated.**

25 Q. So in other words, if they pump down the



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1 aquifer, create a hole in the aquifer, they're  
 2 either pumping out water they physically  
 3 injected into the aquifer or they're actually  
 4 pumping out native water that already exists in  
 5 the aquifer. Is that a true statement?  
 6 **A. That's true.**  
 7 Q. And yesterday we heard an accounting by  
 8 Mr. McCormick with respect to water that's been  
 9 injected in the aquifer from, I believe it was  
 10 2006 to 2015, and we heard a difference between  
 11 9,000 and some change of water that was injected  
 12 into the aquifer during that time period and  
 13 approximately 6,000 acre-feet of water that was  
 14 maintained as a credit. Do you recall that  
 15 discussion yesterday?  
 16 **A. I do.**  
 17 Q. So if we were to set aside, let's assume for a  
 18 moment that this 6,000 plus acre-feet of water  
 19 that was set aside as a credit, we set that  
 20 aside for a moment, if we exclude that, would  
 21 you agree that if the City were to pump a hole  
 22 in the aquifer, the water they're pumping down  
 23 would be native water that already exists in the  
 24 aquifer?  
 25 **A. Yes.**

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1 Q. So in other words, to back up to my prior  
 2 question, and I'm asking you before this flip  
 3 analysis occurs --  
 4 **A. Okay.**  
 5 Q. -- I'll just call it that --  
 6 **A. Sure.**  
 7 Q. -- if there is water left in storage prior to it  
 8 qualifying as an aquifer maintenance credit,  
 9 would you at least agree with me, if we're not  
 10 pumping that water out and it was native water  
 11 as we're pumping it out, if it's left in the  
 12 aquifer, would you also agree that it's the same  
 13 water, it would be native water that's left in  
 14 the aquifer?  
 15 **A. Yes, I would agree with that. We -- we look at**  
 16 **the basin storage area as a leaky 120,000**  
 17 **acre-foot tank in the aquifer.**  
 18 Q. And in other words, excluding this 6,000  
 19 acre-feet of water and if we're in the year,  
 20 let's say, 2016, excluding this 6,000 acre-feet  
 21 of recharge credits that the City had  
 22 accumulated from -- during that time period up  
 23 until that time period, you would agree that the  
 24 rest of the water in the aquifer would not be  
 25 water that the City actually put in the aquifer,

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1 would you agree with that statement?  
 2 **A. That's correct, it would be -- but they didn't**  
 3 **take it out either.**  
 4 Q. Okay.  
 5 **A. It naturally recharged.**  
 6 Q. I'd ask that you turn to page 4-1 of the City's  
 7 proposal. I would ask that you read the last  
 8 two sentences or full sentences on that page  
 9 with the start of that last paragraph where it  
 10 says DWR, GMD2, could you read to me those two  
 11 sentences for the record?  
 12 **A. You want me to start with that one?**  
 13 Q. Yes, please.  
 14 **A. Okay. DWR, GMD2 staff, and the City have each**  
 15 **conveyed interest in developing a simplified**  
 16 **accounting method for AMCs. In addition, using**  
 17 **the current accounting process for AMCs would be**  
 18 **impractical as the physical recharge accounting**  
 19 **relies on a comparison of groundwater modeling**  
 20 **results that utilize actual metered physical**  
 21 **recharge values compared to actual water levels.**  
 22 Q. And, in fact, could you read one more sentence?  
 23 **A. There would be no observed water levels to**  
 24 **compare the AMC results against since the**  
 25 **location of the AMC recharge would be**

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1 **theoretical.**  
 2 Q. So breaking down these two sentences just a  
 3 little bit, which I'll do in greater detail in a  
 4 moment, but breaking down these two sentences  
 5 just a little bit for our purposes for now, what  
 6 these two sentences, these last two sentences  
 7 you read state is that with respect to an actual  
 8 physical recharge, one is able to meter it as  
 9 it's injected into the aquifer. Is that a true  
 10 statement?  
 11 **A. That's true.**  
 12 Q. And, in fact, the City draws a distinction with  
 13 respect to an aquifer maintenance credit and  
 14 states that there's no ability to meter the  
 15 water as it's injected into the aquifer,  
 16 correct?  
 17 **A. It's not injected to the -- into the aquifer.**  
 18 Q. And so because it's not injected into the  
 19 aquifer, there's no way to meter it during that  
 20 process; is that right?  
 21 **A. Well, meter it when it comes out of the**  
 22 **treatment facility and taking it to town, that's**  
 23 **where we would get that value.**  
 24 Q. I understand that but at least there's no way to  
 25 meter the water as it's put into the aquifer

1 because it's not put into the aquifer, correct?  
2 **A. That's correct.**  
3 Q. In fact, as it states in this sentence, the  
4 location of the AMC recharge would be  
5 theoretical, is that what it states?  
6 **A. That's what it states.**  
7 Q. So in other words, it's theoretical in the sense  
8 that there is no actual physical recharge of the  
9 aquifer with respect to an AMC; is that correct?  
10 **A. That's correct.**  
11 Q. In that prior sentence, it indicates that with  
12 respect to the ASR recharge process, the actual  
13 metered physical recharge values are compared to  
14 actual water levels. So let me ask you this: I  
15 asked you about metering as the water is  
16 injected into the aquifer, and we agreed that  
17 that can't occur with respect to an aquifer  
18 maintenance credit. But also to the extent that  
19 a physical recharge credit analyzes the change  
20 in the aquifer levels as it's injected, would we  
21 also agree that with respect to an aquifer  
22 maintenance credit, what this sentence is saying  
23 is that one can't analyze the change in aquifer  
24 levels in the aquifer itself because no water is  
25 injected?

1 with me that when this water is taken out of the  
2 Little Arkansas River, the water in the Little  
3 Arkansas River, would that be the source water  
4 with respect to the AMC?  
5 **A. Yes.**  
6 Q. And would you also agree with me that after that  
7 source water is treated in the ASR treatment  
8 facility, that source water is sent directly to  
9 the City for municipal use?  
10 **A. If -- if there's no room in the aquifer, I would  
11 agree with that.**  
12 Q. And let me just for the record, Mr. Letourneau,  
13 draw a distinction here for a moment. I  
14 understand from the City's answers to our  
15 discovery and, indeed, from the Division of  
16 Water Resources' answers to our discovery that,  
17 and it's been already identified in this hearing  
18 process, that just because we adopt this AMC  
19 proposal doesn't mean that physical recharge  
20 can't also occur at some point. I recall that  
21 discovery and those answers. So for the  
22 purposes of this hearing, can we just for  
23 simplicity purposes draw a distinction between  
24 when I say an AMC and a physical recharge and  
25 just assume for a moment that if we're

1 **A. No water is injected, no water is removed, so  
2 that's correct.**  
3 Q. A moment ago, you indicated for me that when the  
4 metering occurs is when the source water is  
5 sent -- and I should clarify. With the aquifer  
6 maintenance credit proposal, what you told me a  
7 moment ago is the metering actually occurs when  
8 the water is taken out of the Little Arkansas  
9 River and sent directly to the City, is that  
10 what you just stated?  
11 **A. It's metered there but then it also is metered  
12 coming out of the plant, I believe, and that's  
13 the amount -- the meter coming out of the  
14 treatment facility is the number that we would  
15 use for the AMC, the aquifer maintenance credit.**  
16 Q. Thanks for that clarification and I might have  
17 misspoke. So the metered number we're concerned  
18 with is after the water is taken out of the  
19 Little Arkansas River during an overflow and  
20 then it's treated, then that amount is metered  
21 as it's sent directly to the City for municipal  
22 use, is that what you're saying?  
23 **A. Yes.**  
24 Q. Would you agree that when this over -- with  
25 respect to the AMC proposal, would you agree

1 accumulating an AMC that it's not -- that we're  
2 not capable of physically injecting into the  
3 aquifer at that point?  
4 **A. Yes.**  
5 Q. So to back up and just make sure I understand,  
6 when an AMC, an aquifer maintenance credit is  
7 accumulated, the source water from the Little  
8 Arkansas River, after treatment, is sent  
9 directly to the City for municipal use?  
10 **A. Yes.**  
11 Q. Is the Little -- is overflow water from the  
12 Little Arkansas River the only source of -- the  
13 only type of source water that would be used  
14 under the City's AMC proposal?  
15 **A. Yes, that's what's in the proposal.**  
16 Q. Is there more than one manner in which that  
17 source water can be captured from the Little  
18 Arkansas River?  
19 **A. Little Ark surface water and bank storage wells.**  
20 Q. Can you explain for the record the difference  
21 between bank storage wells and the other  
22 storage, the overflow from the Little Arkansas  
23 River, can you explain, I guess, in precise  
24 terminology for the record the difference  
25 between the two?

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1 **A. I'll try. The surface water diversion is just**  
 2 **that, it's surface water from the Little Ark**  
 3 **River. The bank storage wells are wells that**  
 4 **are completed in the alluvium that capture flow**  
 5 **and then delay the flow moving downstream. It's**  
 6 **still considered surface water, and it's stored**  
 7 **in those bank storage wells.**  
 8 Q. Thank you for the explanation, Mr. Letourneau.  
 9 If you could flip to page 3-6 of the City's  
 10 proposal. On page 3-6 of the City's proposal,  
 11 if we were to look at number 6, what it states  
 12 is that AMCs would be accumulated based on the  
 13 metered quantity of water diverted from the  
 14 Little Arkansas River via direct surface water  
 15 diversions or water captured via bank storage  
 16 wells and sent directly to the City?  
 17 **A. Yeah, that's -- that's correct, David, that was**  
 18 **in the proposal, and I overlooked that.**  
 19 Q. So in other words, there is a distinction in the  
 20 proposal itself between the bank storage wells  
 21 and the direct surface water diversions from the  
 22 Little Arkansas River; is that right?  
 23 **A. That's right, and they -- both of those, the**  
 24 **surface water diversion and the bank storage**  
 25 **wells, are still part of the initial diversion**

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1 **of the ASR project, that that's -- that's where**  
 2 **it starts, from both of those.**  
 3 Q. Do you know if the City plans to construct  
 4 future bank storage wells?  
 5 **A. I don't know.**  
 6 Q. Would you agree with me, though, that the  
 7 proposal allows the City to construct future  
 8 bank storage wells?  
 9 **A. It -- up in number 2, it does talk about future**  
 10 **bank storage wells.**  
 11 Q. And, in fact, it says in number 2 specifically,  
 12 quote, future bank storage wells, end quote; is  
 13 that right?  
 14 **A. That's -- that's correct. Bank storage wells**  
 15 **are a good -- are a good way to slow the flow**  
 16 **and to basically get that water before it goes**  
 17 **on to Oklahoma.**  
 18 Q. So in other words, as contemplated in section 2  
 19 on page 3-6 of the City's proposal, would you  
 20 agree that it at least contemplates the  
 21 possibility that the City could build or  
 22 construct future bank storage wells?  
 23 **A. Yes, it does.**  
 24 Q. And would you also agree with me that if the  
 25 City were to construct or build bank storage

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1 wells, it would increase their capacity to  
 2 capture overflow water from the Little Arkansas  
 3 River?  
 4 **A. Yes, it could.**  
 5 Q. Going back to number 6, and I think you also  
 6 already testified to this, but indeed in the  
 7 City's proposal, it also indicates there that  
 8 AMCs would be accumulated based on the metered  
 9 quantity of water diverted to the City from the  
 10 Little Arkansas River, is that what it states in  
 11 number 6?  
 12 **A. Yes, number 6 says that.**  
 13 Q. So with respect to both bank storage wells and  
 14 this overflow water directly diverted from the  
 15 Little Arkansas River, would the water from both  
 16 the bank storage wells and this overflow water  
 17 diverted from the Little Arkansas River, would  
 18 that all be first treated in the ASR treatment  
 19 facility?  
 20 **A. To get an AMC, yes.**  
 21 Q. And so the metering with respect -- and I am  
 22 saying these two different forms of getting the  
 23 water from the Little Arkansas River, if I say  
 24 two different forms, you know what I'm talking  
 25 about, correct?

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1 **A. Yes, yes.**  
 2 Q. With respect to those two different forms, they  
 3 would both be treated and then they would be  
 4 metered as they're sent directly to the City; is  
 5 that correct?  
 6 **A. I believe so, yes. The metering and the**  
 7 **measuring points can all be worked out,**  
 8 **definitely.**  
 9 Q. Let me ask you this: With respect to bank  
 10 storage wells under the existing ASR Phase II  
 11 process or existing infrastructure, would you  
 12 agree with me that with respect to bank storage  
 13 wells, they generally do not require treatment?  
 14 **A. You know, that part I don't know of how the City**  
 15 **operates the bank storage wells.**  
 16 Q. So in other words --  
 17 **A. That's one thing I've not looked into. I mean,**  
 18 **I know -- I know the bank storage wells are**  
 19 **there, I know that they capture surface water,**  
 20 **and the surface water then, I believe, would be**  
 21 **treated. If it was going to be injected, it**  
 22 **would have to be treated to put into the ground.**  
 23 **Unless I'm missing something.**  
 24 Q. So are you fully aware of the extent to which  
 25 both the intake directly from the Little

1 Arkansas River and the bank storage wells are  
2 treated?  
3 **A. I -- no, I'm not fully aware. I mean, I know**  
4 **they would have to be treated to meet drinking**  
5 **water standards to be injected into the ground,**  
6 **I believe. But as far as the -- the extreme**  
7 **technical operations of the ASR treatment,**  
8 **I'm -- I'm not an expert on that.**  
9 Q. We indicated that when the aquifer is at  
10 capacity that no physical recharge can occur in  
11 the aquifer; is that correct?  
12 **A. That's correct.**  
13 Q. Would you also agree with me that strictly as an  
14 AMC, aquifer maintenance credit, is accumulated,  
15 no physical recharge is occurring during that  
16 act either?  
17 **A. That's correct.**  
18 Q. Would you also agree with me that a moment ago  
19 we talked about source water, and you indicated  
20 that with respect to an AMC the source water is  
21 the Little Arkansas River, is that what you  
22 testified to?  
23 **A. Yes.**  
24 Q. Would you also agree with me that as an AMC  
25 credit is accumulated, no source water actually

1 **come up with what would be considered**  
2 **reasonable. And so we accepted the 5 percent**  
3 **initial loss and then the 5 percent close to the**  
4 **river, 3 percent in the middle, and 1 percent to**  
5 **the outside.**  
6 Q. And certainly, Mr. Letourneau, if you want to  
7 flip to page 4-3 of the City's proposal, and if  
8 looking at that page helps to refresh your  
9 memory as you're providing your explanation or  
10 if you want to supplement your explanation,  
11 you're welcome to.  
12 **A. Yeah, that last paragraph, I remember -- I**  
13 **remember the City, the consultants, and us**  
14 **visiting about the loss rates, and I remember**  
15 **Scott Macey bringing this information talking**  
16 **about the historic accounting process and**  
17 **drought modeling efforts and then the**  
18 **hydrogeological characteristics of the aquifer.**  
19 **And to the team, the numbers seemed reasonable.**  
20 Q. When you refer to loss rates, what do you mean  
21 by the term loss rates?  
22 **A. That -- when I talk about -- these, the index**  
23 **cells, my terminology is they leak, and so you**  
24 **put water in and each year that water migrates**  
25 **out of the index cells. A little bit -- a**

1 enters into the aquifer?  
2 **A. That's correct.**  
3 Q. And, in fact, you testified to the same thing  
4 during your deposition, and, indeed, your  
5 testimony today is still the same; is that  
6 correct?  
7 **A. Yes, I try to keep a very consistent message.**  
8 Q. There was a discussion yesterday about the 5  
9 percent initial loss with respect to my  
10 questions of Mr. McCormick. You indicated in  
11 your prior responses to interrogatories and I  
12 believe, indeed, in your deposition testimony  
13 that the 5 percent initial loss, quote, seemed  
14 reasonable, end quote. Do you recall making  
15 that statement?  
16 **A. Yes.**  
17 Q. How did you determine or decide that that 5  
18 percent initial loss seemed reasonable?  
19 **A. By just discussions with the team.**  
20 Q. I would ask -- well, let me ask you this: In a  
21 general, higher level sense, what is your  
22 understanding of how this 5 percent initial loss  
23 is determined?  
24 **A. You know, it was a discussion of the team. I**  
25 **remember the consultants, Wichita just trying to**

1 **little bit of the water leaks out.**  
2 Q. I would ask that you flip to the prior page of  
3 the City's proposal, and the last full paragraph  
4 on that page, could you read for me the last  
5 sentence of that last full paragraph?  
6 **A. Under these conditions, 95 percent of the water**  
7 **recharged is retained as a recharge credit,**  
8 **attachment J.**  
9 Q. So in other words, the proposal, when  
10 calculating this 5 percent initial loss, is  
11 drawing a correlation between the water that  
12 would actually be retained in the form of a  
13 recharge credit, and that's where this 95  
14 percent is coming from; is that correct?  
15 **A. That's correct.**  
16 Q. So, conversely, if we look at the -- how this  
17 5 percent number was determined, the 5 percent  
18 refers to the percent of water that would be  
19 lost as these recharge credits are accumulated;  
20 is that correct?  
21 **A. That's correct.**  
22 Q. Would you also agree that if one analyzes actual  
23 numbers with respect to the ASR project and the  
24 data that we already know with respect to the  
25 ASR project, would you agree that those numbers

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1 as far as the amount of aquifer -- of recharge  
 2 credits or water injected into the aquifer  
 3 versus the amount of recharge credits retained,  
 4 would you agree that that past data would have  
 5 some significance?  
 6 **A. Yes, and it did have significance on how these**  
 7 **particular numbers were picked.**  
 8 Q. So yesterday Mr. McCormick indicated that  
 9 although we put 85 percent, at the top of the  
 10 second full paragraph on page 4-2 of our  
 11 proposal, you know, that was a mistake, it  
 12 should have been closer to 73 percent; and if  
 13 we're to use the new accounting report that came  
 14 in and that he just pulled up on Mr. Boese's  
 15 phone, or perhaps I should say Mrs. Boese's  
 16 phone, it was actually closer to 64 percent; is  
 17 that correct?  
 18 **A. That's correct.**  
 19 Q. So as we hear this live data and we realize that  
 20 the 85 percent number in the City's proposal was  
 21 an error and it's actually much closer to 64  
 22 percent, to the extent we're trying to correlate  
 23 what the actual loss has historically been to  
 24 the number picked within the City's proposal,  
 25 would you agree with me, at least for our

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1 purposes, that a 5 percent initial loss may be  
 2 too low?  
 3 **MR. MCLEOD:** I'm going to object  
 4 again because the 73 percent and 64 percent  
 5 numbers were over the course of the project  
 6 and had no relationship to initial loss.  
 7 **MR. STUCKY:** I think he can --  
 8 **PRESIDING OFFICER:** Response?  
 9 **MR. STUCKY:** My response is he can  
 10 testify if he knows the answer to the  
 11 question.  
 12 **PRESIDING OFFICER:** You can answer  
 13 if you know, and you're, Mr. McLeod, you're  
 14 free to address that on cross.  
 15 **A. You know, what I'll -- I'm going to answer this**  
 16 **question, and we are picking up some errors.**  
 17 **And this hearing process was to gather more**  
 18 **information, and we are gathering more**  
 19 **information, and we will commit to, once these**  
 20 **things are corrected, to take another review of**  
 21 **all of this, definitely. But it does -- yes, it**  
 22 **raises a question and we will review.**  
 23 **BY MR. STUCKY:**  
 24 Q. And, indeed, the numbers we looked at yesterday  
 25 include 1, 3 and -- well, I'm sorry, the City's

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1 proposal also includes 1, 3, and 5 percent  
 2 annual losses as well, depending on the area  
 3 where the cell is in?  
 4 **A. Yes, in addition to the initial loss.**  
 5 Q. So in other words, would you at least agree with  
 6 me that as we consider the City's existing water  
 7 they've injected in versus the actual credits  
 8 they've retained over the course of a number of  
 9 years and we discover that now we're down to  
 10 64 percent and we discovered that the prior  
 11 year, it was at something close to 73 percent,  
 12 would you agree with me that the drop from year  
 13 2015 to year 2016, the drop of -- from  
 14 73 percent to 64 percent was more than a  
 15 1 percent drop?  
 16 **A. Yes, but that is based on where they had to --**  
 17 **where Wichita injected the water, I mean, in**  
 18 **what index cell and the percentage of that index**  
 19 **cell.**  
 20 Q. And certainly you're free to explain your answer  
 21 in greater detail in a moment or --  
 22 **A. Okay.**  
 23 Q. -- through later questioning, but would you  
 24 agree for my purposes that the drop from  
 25 73 percent to 64 percent that occurred in one

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1 year was greater than 1 percent?  
 2 **A. Yes.**  
 3 Q. Would you agree it was greater than 3 percent?  
 4 **A. Yes, I'd have -- now I'm going to have to put a**  
 5 **calculator to it if you get into much higher**  
 6 **percentages.**  
 7 Q. And I'm certainly just looking at the numbers  
 8 yesterday that were identified and agreed to by  
 9 Mr. McCormick. Would you also agree that that  
 10 drop is greater than 5 percent?  
 11 **A. Well, I'd have to put a pencil to it, but it**  
 12 **probably is.**  
 13 Q. The difference between 73 percent and  
 14 64 percent, would you agree that that  
 15 difference --  
 16 **A. Yes.**  
 17 Q. -- is greater than 5 percent?  
 18 **A. Yes.**  
 19 Q. So in other words, regardless of whether we  
 20 consider the annual loss of 1 percent, 3  
 21 percent, or 5 percent, the drop with these live  
 22 numbers that we have from 2015 to 2016, you  
 23 would agree that the drop was greater than any  
 24 of the annual losses -- losses perceived by the  
 25 City in their proposal?

1 **A. Yes, but I have to qualify that with most of the**  
2 **water in the last few years was put into the**  
3 **recharge basin, and that recharge basin has a**  
4 **very high loss rate. And so if you were to**  
5 **distribute those recharge credits over the**  
6 **entire well field, if -- I think if the City had**  
7 **the ability to do that, based on our**  
8 **discussions, it would have been closer to the 5,**  
9 **3, and 1.**  
10 Q. Well, let's back up just a moment. If we assume  
11 just for a moment that this 95 percent number  
12 that the City identifies at the bottom of  
13 page 4-2, if we assume for a moment that that  
14 had a correlation to the 85 percent number that  
15 the City identifies toward the top of that page,  
16 would you agree with me that if the 85 percent  
17 number was, in fact, much less that it would at  
18 least cause some concern for this 95 percent  
19 number that is identified at the bottom of that  
20 page?  
21 **A. Yes, we would -- we would definitely review it.**  
22 Q. So in other words, I understand that in your  
23 deposition testimony and previously you said  
24 that this 5 percent initial loss and the 1, 3,  
25 and 5 percent losses seemed reasonable. As

1 **the modelers may have done on that.**  
2 Q. I would ask that you turn to Exhibit 20. Can  
3 you turn with me to page 69 of Exhibit 20, if  
4 you have that in front of you?  
5 **A. I have -- I'm there.**  
6 Q. And once again, for today's record and to  
7 refresh, this is a true and accurate copy of  
8 your deposition testimony; is that correct?  
9 **A. Yes, it is.**  
10 Q. With respect to page 69 of your deposition  
11 testimony, there were some questions asked about  
12 whether or not there was any kind of independent  
13 calculations done regarding that 5 percent  
14 initial loss. As you read your answer there,  
15 would you agree that, at least to your  
16 knowledge, there was not any independent  
17 calculations or modeling that was performed?  
18 **A. Well, on the model, is that what the part -- on**  
19 **line 7?**  
20 Q. On the 5 percent initial loss concept, would you  
21 agree --  
22 **A. Okay.**  
23 Q. -- that at least to your knowledge, as you were  
24 sitting at that deposition, you weren't aware of  
25 any specific independent calculations or

1 you're sitting here today, at least, would you  
2 agree that you have some more doubt with respect  
3 to those numbers and how they're calculated?  
4 **A. I don't know about doubt, I mean, it's -- it's**  
5 **worth another review based on those numbers, but**  
6 **I do know that those were derived based on an**  
7 **even distribution of the recharge credits. But**  
8 **I do have to say it's worth reviewing.**  
9 Q. And so if you were to make an official  
10 recommendation, would you, as you're sitting  
11 here today, would your recommendation be that  
12 this, at least this part of the proposal,  
13 requires some additional review?  
14 **A. Yes.**  
15 Q. Let me ask this, I just want to clarify one  
16 thing and just so I'm also clear, would you  
17 agree that at least as this proposal was being  
18 analyzed, the City didn't -- I mean, strike that  
19 question. As this proposal was being analyzed,  
20 would you agree that the Division of Water  
21 Resources didn't perform any independent  
22 calculations or any independent modeling as it  
23 related to this 5 percent and this 1, 3, and 5  
24 percent annual loss numbers?  
25 **A. I can't answer, I don't know what -- what work**

1 modeling that was performed to analyze that  
2 5 percent loss?  
3 **A. That's --**  
4 **MR. OLEEN:** I object, if we're  
5 referring to lines of deposition  
6 questioning, then we can read lines of  
7 deposition questioning. I don't see the  
8 question in the deposition transcript that  
9 Mr. Stucky claims exists here. He's  
10 referred to a vague concept, but we have  
11 clear questions here and we have clear  
12 answers here, so that can refresh the  
13 witness's memory or not, but I don't see  
14 the question that Mr. Stucky claims is in  
15 this page 69.  
16 **MR. STUCKY:** He was answering my  
17 question, I think he can answer it.  
18 **BY MR. STUCKY:**  
19 Q. I'll just rephrase. As you're sitting here  
20 today, you're not aware whether or not the  
21 Division of Water Resources did independent  
22 calculations or modeling as it related to this  
23 5 percent initial loss, is that your testimony?  
24 **A. I -- I don't know what they did. I know that**  
25 **our modeling team looked at it and felt it was**

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1 **appropriate.**  
 2 Q. And with respect to the 1, 3, and 5 percent  
 3 annual loss, as you're sitting here today, you  
 4 don't have specific knowledge or information to  
 5 tell you whether or not the Division of Water  
 6 Resources did independent calculations or  
 7 modeling to test that theory; is that -- is that  
 8 right?  
 9 **A. I can't -- I don't know what -- I don't know**  
 10 **what they did. It was -- like this reminded me,**  
 11 **it's an approved model for the accounting. Our**  
 12 **team, you know, they -- our team felt that that**  
 13 **model is appropriate, and so I know our team --**  
 14 **our team reviewed the work and felt it was**  
 15 **appropriate.**  
 16 Q. And you already made a recommendation in this  
 17 regard and already stated it for the record, but  
 18 if you're to go back to your modeling team with  
 19 Division of Water Resources and we were to  
 20 assume for a moment that this Chinese wall was  
 21 broken and you could talk with the modelers at  
 22 the Division of Water Resources again, would  
 23 your recommendation to them be that, hey, maybe  
 24 you should check this 5 percent initial loss  
 25 number again?

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1 **A. Yeah, I would say we -- that we found some**  
 2 **percentage errors in the report, let's see if**  
 3 **those percentage errors had any basis on this**  
 4 **particular part of the proposal. I think that's**  
 5 **more than reasonable, and I think the City would**  
 6 **agree to that, and consultants would agree to**  
 7 **that.**  
 8 Q. With respect to the gradational annual loss,  
 9 yesterday you testified that there's -- losses  
 10 are higher closer to the river. Again, you're  
 11 the -- you're the one who has worked for the  
 12 Division of Water Resources in a technical  
 13 standpoint for 33 plus years, explain to me why  
 14 those gradational losses are higher closer to  
 15 the river.  
 16 **A. It's an alluvial valley, and the -- the alluvium**  
 17 **closer to the river is going to have higher**  
 18 **losses to the river.**  
 19 Q. Do you know what those percentage differences  
 20 are?  
 21 **A. No. I mean, I -- I can find them, I don't know**  
 22 **them off the top of my head.**  
 23 Q. And, in fact, although we don't have percentages  
 24 or numbers in the City's proposal, the City also  
 25 acknowledges in their proposal that the

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1 gradational losses are higher closer to the  
 2 river. Is that a true statement?  
 3 **A. That's true.**  
 4 Q. What numbers -- you mentioned that if you could  
 5 look at the numbers or at the data you would be  
 6 able to answer that question. If you were  
 7 trying to answer that question, what data or  
 8 numbers would you look at?  
 9 **A. We would go to the, probably the accounting**  
 10 **report. I would think the accounting report**  
 11 **would have the losses in the index cells. And,**  
 12 **actually, I would ask our modeling team to do it**  
 13 **is what I would do.**  
 14 Q. I would ask that you turn to table 2-10 in the  
 15 City's proposal.  
 16 **A. I'm there.**  
 17 Q. Yesterday there was a discussion, and in the  
 18 prior days of the hearing there was a discussion  
 19 about the concept of a contingency; is that  
 20 correct?  
 21 **A. That's correct.**  
 22 Q. And would you agree with me that although errors  
 23 were noted in this table, for the most part it  
 24 indicates the range of potential contingencies  
 25 that would be proposed by the City; is that

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1 right?  
 2 **A. That's correct.**  
 3 Q. From the Division of Water Resources'  
 4 standpoint, with you being the expert designated  
 5 by the Division of Water Resources, tell me in  
 6 your words what this concept of a contingency  
 7 is.  
 8 **A. Models aren't absolutely perfect, and so you**  
 9 **want to add a contingency to give yourself a**  
 10 **little window to operate in. And so adding an**  
 11 **additional 10 feet to the bottom is -- was a**  
 12 **reasonable contingency in our mind because when**  
 13 **you go back to figure 11, I believe, another**  
 14 **10 feet out of 131 feet is less than 10 percent.**  
 15 **And I think that contingency, if I recall**  
 16 **appropriately, it was a team of people that**  
 17 **worked together to determine what that**  
 18 **contingency was -- was or should be.**  
 19 Q. Just so I understand a contingency from your  
 20 standpoint, can a contingency be whatever  
 21 number one wants to pick? For example, let's  
 22 say I look at well number 2 and it currently  
 23 says a 10-foot contingency, I understand the  
 24 correct number was supposed to be 20.52 feet for  
 25 the contingency; but let's say for well 2 I said

1 the contingency should be 40 feet, you know  
2 what, I want a big safety net here, this should  
3 be 40 or 50 feet, is that appropriate from a  
4 proposal or modeling standpoint?  
5 **A. It could be but it wouldn't be in my mind for**  
6 **this particular proposal, that's a pretty high**  
7 **percentage of the saturated thickness.**  
8 Q. And why would that not be appropriate for this  
9 proposal?  
10 **A. I just think that that's too much for the**  
11 **saturated thickness that we have. And that's**  
12 **just my opinion.**  
13 Q. And what factors, in your mind, go into helping  
14 to determine what a reasonable contingency, in  
15 fact, is?  
16 **A. Well, that's a modeler's question, based on**  
17 **how -- how the modelers feel about the data**  
18 **going in and the outputs coming out of the**  
19 **model.**  
20 Q. Do you believe that there should be at least  
21 some correlation between the actual modeled  
22 results and the proposed contingencies that were  
23 put into this table?  
24 **A. Well, there's both, isn't there, existing and**  
25 **modeled, in that basis for the proposed level?**

1 would you agree that perhaps that contingency is  
2 a little too aggressive?  
3 **A. You know, maybe but I think also, it's my**  
4 **understanding there is no infrastructure there,**  
5 **so I don't know how significant these wells are.**  
6 Q. So once again -- well, let me ask you this  
7 first: Also in attachment I, Mr. McCormick  
8 testified that the average drop in attachment I  
9 in those wells, the average, was just north of  
10 8 feet. Do you recall that?  
11 **A. Yes.**  
12 Q. And, in fact, the average contingency shown in  
13 this table is actually 10 feet; is that right?  
14 **A. That's correct.**  
15 Q. And once again, a 10-foot contingency is higher  
16 than this average drop that was shown in the  
17 modeled results; is that right?  
18 **A. That's correct.**  
19 Q. So at least as it relates to IW01C and IW02C, if  
20 you were to go back and have a chance to talk  
21 with your modeling team, would you agree with me  
22 that as we're trying to determine what a  
23 reasonable contingency is that it would be your  
24 recommendation that they at least look at those  
25 numbers again?

1 **I think there's both in here, David.**  
2 Q. So is your answer, yes, that you believe there  
3 should be a correlation between the modeled  
4 results and the contingency that's identified  
5 here?  
6 **A. Yes.**  
7 Q. Do you recall our discussion yesterday where I  
8 asked Mr. McCormick to turn to attachment I, and  
9 certainly we can go to attachment I again if you  
10 want to, but just for simplicity purposes and to  
11 speed up this process, Mr. McCormick identified  
12 the fact that there -- with respect to IW01C and  
13 IW02C that the actual drop shown in the well  
14 during the City's modeling was less than the  
15 contingency that was added? Would you -- do you  
16 recall that?  
17 **A. I do, uh-huh.**  
18 Q. And, in fact, certainly we can define what's  
19 meant by significant, but would you agree that  
20 it was significantly less than the proposed  
21 contingency?  
22 **A. Yes.**  
23 Q. So at least with respect to IW01C and IW02C,  
24 would you perhaps agree that this contingency,  
25 proposed contingency of 23 feet and 20.52 feet,

1 **A. Yeah, based on the outcome of this hearing,**  
2 **definitely.**  
3 Q. And with respect to the contingencies on this  
4 entire table, when we talk about a difference  
5 between 10 feet and 8 feet, with respect to the  
6 collective contingencies on this table, would  
7 you also ask your modelers to look at that again  
8 and ensure that it was reasonable?  
9 **A. Yes, uh-huh.**  
10 Q. Yesterday there was a discussion about the use  
11 of the 1998 levels and this concept of 5 MGD.  
12 Do you recall that discussion?  
13 **A. I do.**  
14 Q. From your standpoint -- first of all, do you  
15 understand -- prior to coming into this hearing,  
16 did you understand that these numbers were based  
17 on Cheney being 100 percent full or 110 percent  
18 full, what was your understanding prior to  
19 coming into this hearing?  
20 **A. Prior to the hearing, 110, but now it's at 100,**  
21 **as I understand.**  
22 Q. If the modeling was -- did this error of the  
23 difference between 110 versus 100, are you  
24 willing to accept that that was just a clerical  
25 error?



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1 **A. Yes.**  
 2 Q. Do you know why, and I'm going to go ahead and  
 3 say 100 percent full for Cheney, do you know why  
 4 Cheney was started at 100 percent full versus  
 5 the aquifer starting at 91 percent full with the  
 6 1998 levels?  
 7 **A. It was probably based on actual.**  
 8 Q. The actual for what?  
 9 **A. The -- I imagine it was the actual data for**  
 10 **Cheney being full in '98 and the aquifer being**  
 11 **at 91 percent in '98. That's -- that's what I**  
 12 **would have assumed.**  
 13 Q. Do you -- and would you also agree with the  
 14 testimony yesterday that if it's rained a lot  
 15 and we assume that the aquifer is 100 percent  
 16 full, it would take a lot longer to deplete down  
 17 to the minimum index levels?  
 18 **A. Absolutely.**  
 19 Q. And so would you agree that there's a  
 20 significant difference between starting the  
 21 aquifer at 100 percent full in our projections  
 22 versus only 91 percent full in our projections?  
 23 **A. Yes.**  
 24 Q. And, in fact, it would take much longer to  
 25 deplete down to the current minimum index levels

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1 if we assume the aquifer started at 100 percent  
 2 full?  
 3 **A. That's right, that's why we're trying to manage**  
 4 **the aquifer full, that's what this proposal is**  
 5 **about.**  
 6 Q. Do you think that it would be useful data or  
 7 useful information to have to at least have some  
 8 modeling and have an understanding of at what  
 9 juncture or at what point we would hit the  
 10 minimum index levels if we were to assume the  
 11 aquifer started at 100 percent full?  
 12 **A. Well, we like data, I mean, it can't -- it can't**  
 13 **hurt, but it's not part of this proposal, I**  
 14 **mean ...**  
 15 Q. But as we're evaluating this proposal and we're  
 16 attempting to evaluate the effects that the  
 17 City's proposal would have on the aquifer, do  
 18 you believe that it would at least -- if we had  
 19 it, that it would be a useful data set to know  
 20 what the City's proposal would do if we started  
 21 the aquifer at 100 percent full?  
 22 **A. Yes, I like data.**  
 23 Q. Why was the 5 MGD, why was that based on the  
 24 1998 water levels? Oh, I'm sorry, strike that  
 25 question. The 30 MGD was based on the 1998

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1 water levels; is that correct?  
 2 **A. Yes, I believe so.**  
 3 Q. Do you know as you're sitting here, and if you  
 4 don't know the answer to this, it's completely  
 5 fair to say I don't know, do you know how this  
 6 30 MGD concept was derived as it related to the  
 7 1998 levels?  
 8 **A. Well, the 30 MGD is the plant capacity, but I**  
 9 **don't know how it was associated with the '98**  
 10 **level.**  
 11 Q. Do you know why 5 MGD is the minimum for  
 12 recharge?  
 13 **A. I don't know.**  
 14 Q. And so if I'm to ask you if this 5 MGD is based  
 15 on hard data or if it's just an arbitrary  
 16 number, you wouldn't know the difference?  
 17 **A. I don't know, David, no.**  
 18 Q. And if I were to ask you if it's possible for  
 19 the City to recharge, do physical recharge of  
 20 the aquifer when we drop below that 5 MGD, you  
 21 don't know the answer to that?  
 22 **A. I don't know.**  
 23 Q. But you at least did indicate that you had a  
 24 knowledge of where this 30 MGD came from with  
 25 respect to the 1998 levels; is that correct?

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1 **A. I know where the 30 MGD came from, but I don't**  
 2 **know how it's associated with the '98 levels. I**  
 3 **know it's -- I know it's the plant capacity.**  
 4 Q. Do you know at what percent full, and we talked  
 5 1998 levels, Mr. McCormick said that means the  
 6 aquifer is 91 percent full, do you know at what  
 7 percent full the aquifer has to be before the  
 8 City can operate at 30 MGD?  
 9 **A. I don't know.**  
 10 Q. I would ask that you turn to page 2-11 of your  
 11 proposal. In that first full paragraph, in the  
 12 third sentence, it states, this comparison  
 13 indicated that the simulated groundwater levels  
 14 representing the end of the 1998 period were the  
 15 best match for representing the minimum  
 16 groundwater levels required to maintain 30 MGD  
 17 of physical ASR recharge capacity. Would you  
 18 agree with me that that's what that sentence  
 19 states?  
 20 **A. Yes.**  
 21 Q. And I think your testimony is you're not sure  
 22 what is meant by the terminology best match, end  
 23 quote, in that sentence; is that right?  
 24 **A. You know, what modelers do is they look for**  
 25 **comparison periods, and so I'm sure that's**

1 **probably what the modelers did at that time.**  
2 **But that -- that's a modeler's question.**  
3 Q. And you don't know why the modelers from the  
4 City felt that that 1998 level was the best  
5 match, you're not sure why?  
6 **A. Well, I'm sure because it matched up on data. I**  
7 **mean, when I talk to our modelers, that's what**  
8 **they do. I mean, they -- they look at what the**  
9 **model does and then they compare it to past**  
10 **periods and they find a past period that's --**  
11 **that's appropriate, that matches up pretty well.**  
12 Q. Yesterday we discussed the fact that the City is  
13 now wanting to put 120,000 acre-foot cap on the  
14 recharge credits that they can accumulate; is  
15 that correct?  
16 **A. That's correct.**  
17 Q. And, in fact, what the City is proposing is to  
18 apply that recharge cap not just to AMC credits  
19 but also to ASR Phase II physical recharge  
20 credits; is that correct?  
21 **A. That's correct.**  
22 Q. In your deposition, did you testify that this  
23 120,000 acre-foot cap was based on what the City  
24 says is the recharge capacity of the aquifer?  
25 **A. Well, it's actually the USGS report. The United**

1 that what you previously indicated?  
2 **A. Yes.**  
3 Q. And, in fact, in your deposition, if we were to  
4 turn to Exhibit 20 of your deposition.  
5 **A. I'm there.**  
6 Q. If you turn to page 70 of your deposition.  
7 **A. Okay.**  
8 Q. You indicate in your answer that the City came  
9 up with the 120,000 acre-foot cap strictly based  
10 on the USGS report indicating that that was the  
11 physical recharge capacity of the aquifer. Is  
12 that what you state in your deposition?  
13 **A. Close, yep, very close.**  
14 Q. All right. I would ask that you turn to page  
15 3-7 of the City's proposal in that black  
16 notebook now. With respect to page 3-7, could  
17 you read that first sentence of the very last  
18 paragraph, and it's not a full paragraph on that  
19 page, but the first sentence of that paragraph?  
20 **A. To determine the physical recharge capacity of**  
21 **the ASR recharge well network, the City**  
22 **proposing the implementation of an annual water**  
23 **level monitoring program in conjunction with a**  
24 **recharge capacity calculation table.**  
25 Q. And so to understand this sentence, and I --

1 **States Geological Survey report, it's in a table**  
2 **in that report somewhere that that's the**  
3 **capacity of the basin storage area.**  
4 Q. I would ask that you flip to Exhibit 13 in the  
5 notebooks before you. Well, let me just back up  
6 and ask this question before I ask you to flip  
7 to a given interrogatory. Did you testify  
8 previously or at least indicate previously that  
9 the Division of Water Resources, at least, did  
10 not independently verify where this 120,000-foot  
11 number came from?  
12 **A. Well, we knew it came from the USGS report.**  
13 Q. My question is did you do any kind of  
14 independent calculations or independent modeling  
15 to determine if this 120,000-foot number was  
16 accurate?  
17 **A. No, because we agree with the model.**  
18 Q. I'll save you sometime in flipping through --  
19 **A. Okay.**  
20 Q. -- Exhibit 13.  
21 **A. I don't need it now; is that right? Okay.**  
22 Q. But you would agree with me that you have  
23 previously indicated that this 120,000-foot  
24 number comes from the actual physical recharge  
25 capacity space, if you will, in the aquifer, is

1 when you were reading into the record a prior  
2 page, I think you paused when you arrived at the  
3 typo, but in this one, it should say the City is  
4 proposing the implementation of an annual water  
5 level monitoring program. Is that what it  
6 should say?  
7 **A. That's what it should say.**  
8 Q. Okay. What, in your mind, is this annual water  
9 level monitoring program that the City would put  
10 in place in conjunction with a recharge  
11 calculation or a recharge capacity calculation  
12 table?  
13 **A. Well, we have to understand the water level in**  
14 **the basin storage area so we understand if it**  
15 **can take physical recharge credits or not. So**  
16 **it's my understanding that this -- there would**  
17 **be an annual water level monitoring program, and**  
18 **then along with that, there would be a recharge**  
19 **capacity calculation table.**  
20 Q. And I'm going to back up, the preparatory clause  
21 of this sentence states, quote, to determine the  
22 physical recharge capacity of the ASR recharge  
23 well network, end quote, would you agree that  
24 that's the preparatory clause of this sentence?  
25 **A. Yes, yes, absolutely.**

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1 Q. And so what it's referring to here is monitoring  
 2 the physical recharge capacity of the ASR  
 3 recharge well network; is that right?  
 4 **A. That's correct.**  
 5 Q. So this monitoring program of sorts would be  
 6 designed to help monitor and determine what the  
 7 recharge capacity is of this well network?  
 8 **A. Correct.**  
 9 Q. And so I guess my question is, if we're going to  
 10 put a monitoring program in place to try and  
 11 determine what the capacity is as events unfold  
 12 and as time changes, is this capacity of 120,000  
 13 acre-feet, is that not a definitive number, is  
 14 that something that requires more study and more  
 15 monitoring in the future?  
 16 **A. Oh, I -- I don't know how it -- how the 120,000**  
 17 **relates to this. I see this as if we're at a**  
 18 **certain level in the aquifer, then we can**  
 19 **recharge this amount, with the 120,000 being the**  
 20 **cap, the overall cap, so ...**  
 21 Q. But at least -- I understand that that's your  
 22 understanding, but as this sentence is worded,  
 23 it implies, at least, that the City will be  
 24 monitoring what the actual recharge capacity is  
 25 over the course of time. Is that at least how

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1 the sentence reads?  
 2 **A. Yes, uh-huh. Yes.**  
 3 Q. And so from, again, my simple mind where I'm  
 4 trying to understand all this, can you at least  
 5 understand how it invites the question that the  
 6 City perceives that this recharge capacity needs  
 7 to be monitored and evaluated further in the  
 8 future?  
 9 **A. Well, I think it's -- they're doing it -- I**  
 10 **mean, they're monitoring it now. I -- I just**  
 11 **see this as now -- now they're going to lay out**  
 12 **what the physical recharge capacity is of the**  
 13 **aquifer. Now they do the monitoring to see if**  
 14 **they can recharge, but then this adds to it the**  
 15 **recharge capacity component.**  
 16 Q. So despite what this sentence states, you don't  
 17 believe that it means that the City intends to  
 18 try and further evaluate what the actual  
 19 recharge capacity is of the aquifer?  
 20 **A. Well, they -- they're going to use a water level**  
 21 **monitoring program to determine the recharge**  
 22 **capacity. I think the table -- I think the**  
 23 **table will just be there for transparency for**  
 24 **people to see. I mean, that's how I see this.**  
 25 Q. And I just want to back up a little bit here

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1 just to make this, perhaps, conceptually easier  
 2 to understand for the audience and for our  
 3 hearing officer, there's a difference between  
 4 120,000 acre-foot capacity in the aquifer versus  
 5 the physical recharge capacity of the aquifer,  
 6 is there a difference between those two numbers?  
 7 **A. I don't think so. I don't -- if we were back**  
 8 **down to the '93 level at the start and we**  
 9 **maintained it at that level, there would be**  
 10 **120,000 acre-feet of storage area. It -- we**  
 11 **look at this as 120,000 acre-foot tank in the**  
 12 **aquifer, a leaky tank. That's the box, that's**  
 13 **the basin storage area is 120,000 acre-feet in**  
 14 **the aquifer.**  
 15 Q. So do you believe that there should be  
 16 further -- I mean, if this is something the City  
 17 is already proposing to do, do you agree with  
 18 the City that these numbers should be better and  
 19 further evaluated in the future?  
 20 **A. I think -- I think all the monitoring is**  
 21 **available. I don't -- I don't know what -- what**  
 22 **additional evaluation should be done. If you**  
 23 **could help me -- if you could help me understand**  
 24 **that.**  
 25 Q. My question is this: To the extent that the

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1 City says we're proposing implementation of  
 2 additional monitoring, would you agree that if  
 3 the City is already proposing that, that's  
 4 something that should occur?  
 5 **A. Yes, I can -- I can answer yes to that.**  
 6 **PRESIDING OFFICER:** And I have a  
 7 question. If I'm following you correctly,  
 8 it appears to me that the 120,000 acre-feet  
 9 cap is not dependent on actual capacity as  
 10 monitored?  
 11 **A. Correct.**  
 12 **BY MR. STUCKY:**  
 13 Q. Yesterday Mr. McLeod asked that if the City's  
 14 drought projections were overblown, did you  
 15 agree with the fact that it would mean that the  
 16 City would use less water?  
 17 **MR. MCLEOD:** I'm going to object  
 18 because I think the question was about the  
 19 City's demand projections and Counsel has  
 20 misstated it.  
 21 **MR. STUCKY:** I'll rephrase.  
 22 **BY MR. STUCKY:**  
 23 Q. Would you agree that yesterday Mr. McLeod asked  
 24 you that if the City's drought projections were  
 25 overblown it would mean that the City would

1 actually need less water in the future?  
 2 **A. Yes.**  
 3 Q. And he asked you a further question that if  
 4 these projections, these demand projections were  
 5 overblown, he said the City would need less  
 6 water; is that right?  
 7 **A. Yes.**  
 8 Q. So let me ask you this: If we were to assume,  
 9 based on Mr. McLeod's line of questioning, that  
 10 these demand projections are overblown and we  
 11 learn that the City is actually going to need  
 12 less water in the future, do you believe that  
 13 the cap on the City's physical recharge credits  
 14 and on their AMC credits should be less than  
 15 120,000 acre-feet?  
 16 **A. No, I'm -- that's the space in the aquifer right**  
 17 **now, so I don't -- I don't see -- see why that**  
 18 **should be any less than 120.**  
 19 Q. So let me rephrase my question. Let's say --  
 20 let's just use some strict hypotheticals here.  
 21 **A. Okay.**  
 22 Q. Let's say on one hand we understand that the  
 23 City's annual demand is going to be 70,000  
 24 acre-feet of water, and, indeed, that number, I  
 25 think, shows up at least in one table; is that

1 correct?  
 2 **A. 59 -- in one year, I think 59, 9 was the largest**  
 3 **number.**  
 4 Q. My question is combined from all sources?  
 5 **A. Oh, okay, yes, you're right.**  
 6 Q. So let's say that we're looking at a large city  
 7 like the City of Wichita and they say, we could  
 8 use up to 70,000 acre-feet of water in a year  
 9 from all sources, but on the other hand we look  
 10 to, let's say, the City of Bentley, and the City  
 11 of Bentley says, you know, we're probably only  
 12 going to need 1,000 acre-feet of water a year -  
 13 I'm sure they're going to need more than that,  
 14 but I'm just using easy numbers - the City of  
 15 Bentley says, we're only going to use 1,000  
 16 acre-feet of water a year and that's the most  
 17 we'll ever use. And let's say the City of  
 18 Bentley implements this exact same proposal, or  
 19 tries to implement this exact same proposal that  
 20 the City has brought before us, and let's say  
 21 that the City of Bentley says, we want to start  
 22 accumulating recharge credits. If the City of  
 23 Bentley said, we want to be able to accumulate  
 24 up to 120,000 acre-feet of credits, and we  
 25 assume that the most they could ever use in a

1 year was 1,000, at least for the purposes of  
 2 this hypothetical, would you agree that it would  
 3 take the City of Bentley 120 years to utilize  
 4 those accumulated recharge credits?  
 5 **A. Yes.**  
 6 Q. In the example of the City of Bentley, would you  
 7 believe that 120,000 acre-foot cap would be a  
 8 reasonable number?  
 9 **A. Not for the -- for a city the size of Bentley.**  
 10 Q. Okay. So let me ask you this: Let's say the  
 11 City of Wichita is successful with their  
 12 proposal just for a moment, and then the City of  
 13 Sedgwick jumps in and says, we want to build a  
 14 recharge capacity, the City of Bentley says, we  
 15 want to build a recharge facility, the City of  
 16 Halstead says, we want to build a recharge  
 17 facility, and suddenly we have all these other  
 18 cities that are saying they want to build  
 19 recharge facilities. If we put the cap of  
 20 120,000 acre-feet on the City and that cap  
 21 represents all the available water in the  
 22 aquifer, what cap would you put on these other  
 23 cities if -- if all this water is already  
 24 designated in a cap to the City of Wichita?  
 25 **A. Well, we'd have --**

1 **MR. OLEEN:** I object, I -- we're  
 2 here to talk about one proposal for one  
 3 City, and we have no other ASR project in  
 4 the State of Kansas like this one. So  
 5 maybe Mr. Stucky wants the universe when  
 6 that will happen, but that's not the  
 7 current state of the state, and I think --  
 8 I think the hypothetical is a little too  
 9 attenuated.  
 10 **MR. STUCKY:** And I'll get to a point  
 11 very quickly, Ms. Owen, but I think it's a  
 12 fair line of questioning as we're trying to  
 13 conceptualize the nature of this cap.  
 14 **PRESIDING OFFICER:** I think you're  
 15 getting to the reasonableness of the cap  
 16 so let's get there.  
 17 **BY MR. STUCKY:**  
 18 Q. So if this 120,000 acre-foot cap is put on the  
 19 City and these other -- on the City of Wichita  
 20 and other cities are now trying to implement  
 21 similar aquifer storage and recovery systems,  
 22 would there be any acre-feet left in the form of  
 23 a cap to put on these other cities?  
 24 **A. It'd be based on their particular aquifer and**  
 25 **their aquifer parameters. But then we -- not**

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1 **only is this 120,000 acre-foot space in the cap,**  
 2 **there was further justification for this because**  
 3 **if you look at the one table that shows their**  
 4 **needs, it was about 60,000 acre-feet. And**  
 5 **60,000 acre-feet in that eight-year period for**  
 6 **that 1 percent drought, what if we go into**  
 7 **another 1 percent drought in that next eight**  
 8 **years? So this was about 50,000 acre-feet for**  
 9 **back-to-back droughts. That's how we justified**  
 10 **the 120,000 acre-feet.**  
 11 **Now, though, we've not fully negotiated a**  
 12 **cap with the City. We wanted to go through this**  
 13 **hearing process to see what the most appropriate**  
 14 **cap was for the City. But to move this forward,**  
 15 **I wanted to tell you there was more than just**  
 16 **space in the aquifer that we looked at to**  
 17 **justify that quantity, it was two back-to-back**  
 18 **droughts.**  
 19 **PRESIDING OFFICER:** That was going  
 20 to be my next question so thank you.  
 21 **BY MR. STUCKY:**  
 22 Q. Mr. Letourneau, part of what an agency like the  
 23 Division of Water Resources does is help to make  
 24 policy; is that right?  
 25 **A. That's correct.**

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1 Q. And as you help to make policy, you have to  
 2 consider what's in the public interest; is that  
 3 right?  
 4 **A. That's correct.**  
 5 Q. And, indeed, agencies are given a level of  
 6 deference as they're made policies; is that  
 7 correct?  
 8 **A. Correct, uh-huh.**  
 9 Q. And as policies are made, one thing an agency  
 10 must think about is what is the parade of evils  
 11 that can maybe occur if we implement a given  
 12 policy, is that right, is that something you  
 13 think about?  
 14 **A. Yeah, absolutely, especially when an unintended**  
 15 **consequence happens, you know, so ...**  
 16 Q. So my question is this: As we set the cap at  
 17 120,000 acre-feet, have you accounted for or  
 18 thought of what would happen if other  
 19 municipalities also implement recharge projects  
 20 within the Equus Beds well field?  
 21 **A. Yes, I mean, we -- that's always in the back of**  
 22 **our mind. And there's another one in Garden**  
 23 **City that's in the back of our mind.**  
 24 Q. So as we think about that and we think about  
 25 this 120,000 acre-foot cap, do you believe that

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1 that number should be looked at again and  
 2 perhaps that number should be less?  
 3 **A. Well, I mean, we did -- we do want to talk to**  
 4 **the City about an appropriate cap, but then**  
 5 **right now with the physical recharge credits,**  
 6 **they don't have a cap at all. Their only cap is**  
 7 **the physical limitation of the aquifer right**  
 8 **now.**  
 9 Q. But, again, the fact that they don't have any  
 10 cap now is based on the fact that for each  
 11 gallon they take out, minus any kind of annual  
 12 or gradational losses, is a gallon of water  
 13 they've actually physically put into the  
 14 aquifer; is that right?  
 15 **A. That's correct.**  
 16 Q. And so in other words, under ASR Phase II,  
 17 there's no cap in place, but this is water that  
 18 the City actually has put in the aquifer; is  
 19 that right?  
 20 **A. That's right.**  
 21 Q. So my question is this: With respect to the  
 22 120,000 acre-foot cap, when we're considering  
 23 water that the City actually now in the new  
 24 proposal has not physically injected into the  
 25 aquifer, my question is is 120,000 acre-feet too

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1 high of a number for the cap?  
 2 **A. My -- my first response is no based on my**  
 3 **answers before, but it is -- it is something to**  
 4 **look at to see what -- to work with the City to**  
 5 **see what's the most reasonable number. But we**  
 6 **want to take into account two droughts back to**  
 7 **back because you never know when they're going**  
 8 **to start or finish.**  
 9 Q. So if we were to determine this cap based on  
 10 this 120,000 acre-feet, and that represents  
 11 what's theoretically available in the aquifer,  
 12 what we're saying is if the City were to  
 13 accumulate 120,000 acre-feet of credits both  
 14 from ASR Phase II and with the aquifer  
 15 maintenance credit proposal that in the future  
 16 they could divert up to 120,000 acre-feet out of  
 17 the aquifer. Is that what we're saying?  
 18 **A. At 19,000 acre-foot per year.**  
 19 Q. But based on the 19,000 acre-foot per year  
 20 limitation, they could, then, divert up to  
 21 120,000 acre-feet of water out of the aquifer in  
 22 the future; is that right?  
 23 **A. Correct.**  
 24 Q. And I know that we've drawn a distinction  
 25 between ASR Phase II and the aquifer maintenance

1 credit proposal, but would you agree that if  
2 both were in effect, both ASR Phase II and the  
3 AMC proposal, that at least a portion of that  
4 120,000 acre-feet would not be water injected  
5 into the aquifer by the City?

6 **A. That's correct.**

7 Q. So by putting this cap at 120,000 acre-feet and  
8 defining that cap based on what's physically  
9 available as far as recharge capacity in the  
10 aquifer, is that essentially saying or  
11 suggesting that the City has rights or ownership  
12 rights to that 120,000 acre-feet of available  
13 aquifer space?

14 **A. Well, I mean, they -- they've got the right to  
15 put 120,000 acre-feet of recharge credits into  
16 that space based on that's the basin storage  
17 area, they've got the right to do that. You  
18 know, I don't know who owns that space, or  
19 whatever, they've got the right to put the water  
20 there.**

21 Q. But at least with the AMC proposal, they're not  
22 physically injecting any water in the aquifer;  
23 is that right?

24 **A. That's correct.**

25 Q. And so here today I believe we have some farmers

1 in the room, we have farmers in the room and,  
2 you know, the City starts to divert 120,000  
3 acre-feet of water out of the aquifer in the  
4 future and one of the farmers in the room says,  
5 hey, my water right number is water right  
6 number 13, I have one of the most senior water  
7 right numbers in the State of Kansas and they  
8 say, wait a minute, this is my -- this is water  
9 dedicated to me, this is water dedicated to the  
10 people of the State of Kansas, and yet the City  
11 is claiming that they have rights to this whole  
12 120,000 acre-feet, can you at least see how  
13 this -- perhaps a farmer or another user of the  
14 aquifer would have some concern with this  
15 concept?

16 **MR. OLEEN:** I object and I'm not  
17 trying to unduly disrupt counsel's  
18 cross-examination, but previously the  
19 witness testified that only 19,000  
20 acre-feet can be withdrawn currently  
21 recharge credits per year, and so I believe  
22 counsel's statement suggested or implied  
23 that 120,000 was going -- that some farmer  
24 was going to hear that 120,000 had started  
25 to be withdrawn. And I think it's

1 important that we have that qualification  
2 that only 19,000 recharge credits per year  
3 currently can be withdrawn. So I object to  
4 the form of the question.

5 **PRESIDING OFFICER:** And I think  
6 you're asking more about the space --

7 **MR. STUCKY:** That's right.

8 **PRESIDING OFFICER:** -- than the  
9 quantity so if you could clarify.

10 **BY MR. STUCKY:**

11 Q. He's already clarified but 19,000 a year is what  
12 we're limited to, I think that was made clear a  
13 moment ago. What I'm saying is over the course  
14 of time, if the City has the right to pull out  
15 120,000 acre-feet of water over the course of  
16 time, can you at least understand or perceive  
17 why other water users who say this water is  
18 dedicated to us would have concern?

19 **A. Yeah, and it's an educational process. What  
20 people need to understand, this is a different  
21 source of water, it's just stored in the Equus  
22 Beds well field. And like I explained before,  
23 it -- this is like -- the basin storage area is  
24 like a leaky tank that is just located into the  
25 Equus Beds well field. So I do understand how**

1 **people can be very confused by that, but it is a  
2 different source of water.**  
3 Q. Let me ask you this: In the Water Appropriation  
4 Act, with which you're very familiar, and if we  
5 need to, I can have you turn to the Water  
6 Appropriation Act, would you at least agree with  
7 me that one of the basic premises in the  
8 beginning of the Water Appropriation Act and,  
9 indeed, in the seminal case in Kansas with  
10 respect to water law in Kansas, which  
11 incidentally was Williams versus the City of  
12 Wichita that was decided in 1953, both in the  
13 Water Appropriation Act that was passed in 1945  
14 versus this case that was decided in 1953, would  
15 you agree that a basic principle in Kansas is  
16 that all water is dedicated to the people of the  
17 State of Kansas, would you agree with that  
18 premise?

19 **A. Yes, absolutely.**  
20 Q. But with the City's proposal, are we saying now  
21 that this 120,000 acre-feet of water is, in  
22 fact, at least by virtue of their proposal,  
23 being dedicated to the City of Wichita?  
24 **A. The City of Wichita -- those are recharge  
25 credits for the City of Wichita, that's a**

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1 **different source of water.**  
 2 Q. So in other words, at least with respect to the  
 3 City's proposal, up to 120,000 acre-feet of  
 4 water would be dedicated to the City of Wichita;  
 5 is that correct?  
 6 **A. Only if the City actually had a recharge credit.**  
 7 **That's the space that's there.**  
 8 Q. To the extent the City has accumulated 120,000  
 9 acre-feet of recharge credits, would 120,000  
 10 acre-feet of water then be dedicated to the City  
 11 of Wichita?  
 12 **A. Yes. And they can do that today with the**  
 13 **physical recharge credit capacity that they**  
 14 **have.**  
 15 Q. Let's move on to how water could enter into the  
 16 aquifer strictly speaking when the City is  
 17 utilizing its -- when the City is accumulating  
 18 an AMC credit. I believe that previously you  
 19 have indicated that as the City is accumulating  
 20 an aquifer maintenance credit, there's a  
 21 potential, at least, for water to enter into the  
 22 aquifer through gravity flow. Is that  
 23 something --  
 24 **A. Rainfall --**  
 25 Q. -- you said previously?

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1 **A. I'm sorry, David, I didn't let you finish. Yes,**  
 2 **I mean, there's natural recharge.**  
 3 Q. And when you say natural recharge, what do you  
 4 mean by natural recharge?  
 5 **A. Rainfall. From rainfall.**  
 6 Q. So in other words, you indicate that strictly  
 7 speaking when an AMC is accumulated, an AMC  
 8 credit is accumulated, the only water that would  
 9 enter into the aquifer at that time would be  
 10 through natural recharge or rain flow, assuming  
 11 no physical injection occurs?  
 12 **A. Correct.**  
 13 Q. Could you turn in your notebook to Exhibit 12?  
 14 And we don't have to worry about an objection  
 15 here because there is no objection to  
 16 interrog -- to request for admission number 2,  
 17 but could you read for me request for admission  
 18 number 2 and your answer?  
 19 **A. Admit or deny that no source water will enter**  
 20 **into the aquifer through gravity flow due to the**  
 21 **AMC proposal.**  
 22 Q. And what was the answer?  
 23 **A. Partially admitted and partial -- partially**  
 24 **denied. It is DWR's current understanding that**  
 25 **under the AMC proposal, some source water may,**

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1 **through gravity flow, enter into the basin**  
 2 **storage area that resides in the aquifer,**  
 3 **depending on how the City manages the recharge**  
 4 **basin. Earlier -- earlier, David, I didn't**  
 5 **think of the recharge basin.**  
 6 Q. So my question is what is meant in this answer  
 7 by how the City manages the recharge basin?  
 8 **A. If -- if the City is still going to put water**  
 9 **into the recharge basin and then that -- there's**  
 10 **no injection there, the water goes into the**  
 11 **recharge basin and it gravity flows into the**  
 12 **aquifer.**  
 13 Q. So that brings us back to our discussion  
 14 yesterday that even when the aquifer is full,  
 15 the City could still theoretically attempt to  
 16 inject water into the aquifer through these  
 17 recharge basins. Is that a true statement?  
 18 **A. Well, they don't inject it into the aquifer;**  
 19 **they put it into the recharge basin and they let**  
 20 **it gravity flow into the basin.**  
 21 Q. I'll rephrase. So when the aquifer is full,  
 22 they can put water into these recharge basins  
 23 and over the course of time, through gravity  
 24 flow, it could enter into the aquifer. Is that  
 25 a true statement?

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1 **A. That's a true statement.**  
 2 Q. And so when you said depending on how the City  
 3 manages, that's what's meant by that statement?  
 4 **A. Correct.**  
 5 Q. Previously, we have had a discussion about the  
 6 concept of safe yield; is that right?  
 7 **A. That's correct.**  
 8 Q. And yesterday we talked about how artificial  
 9 recharge, at least, is exempt from safe yield;  
 10 is that right?  
 11 **A. That's correct, it's a different source of**  
 12 **water.**  
 13 Q. And, in fact, you indicated that at least when  
 14 K.A.R. 5-22-7 was enacted, it only contemplated  
 15 artificial recharge, to the best of your  
 16 knowledge --  
 17 **A. That's --**  
 18 Q. -- is that right?  
 19 **A. That's what was available at the time, correct.**  
 20 Q. And I didn't ask you this question yesterday,  
 21 but at least to the best of your knowledge, has  
 22 that statute -- strike that. Has that  
 23 regulation been modified to account for aquifer  
 24 maintenance credits?  
 25 **A. No, they're not approved yet.**

1 Q. My question is this, though, if that regulation  
2 was put into place to deal with physical  
3 recharge, my question is has there been a  
4 regulation change that has been made, to the  
5 best of your knowledge, since it was  
6 implemented?

7 **A. No, no regulation change.**

8 Q. And, in fact, that particular regulation does  
9 not mention the concept of aquifer maintenance  
10 credits; is that right?

11 **A. No, nothing -- nothing does because an aquifer  
12 maintenance credit is just a recharge credit.**

13 Q. And let me ask you this: If you were to review  
14 current regulations and current statutes, and I  
15 assume you've done that, you haven't found a  
16 definition of aquifer maintenance credits; is  
17 that correct?

18 **A. No, we have a definition of recharge credit, and  
19 an aquifer maintenance credit is a recharge  
20 credit.**

21 Q. But in other words, let me just ask this, and I  
22 understand, Mr. Letourneau, what your opinion is  
23 with regard to an aquifer maintenance credit and  
24 whether it's a recharge credit, my question is  
25 simply this: Is the term aquifer maintenance

1 **A. You know, David, that I don't know. I -- that  
2 was turned over to our legal team. We just  
3 asked -- we had -- we asked the question of our  
4 legal team.**

5 Q. So you know that there was input that was  
6 received from the City, but you're not sure  
7 whether or not input was heard from the  
8 District. Is that -- is that your statement?

9 **A. Correct, I don't recall any from the District.**

10 Q. In the event that Ms. Owen finds that, in fact,  
11 an aquifer maintenance credit is not just merely  
12 a form of a physical recharge credit, would you  
13 agree, then, under that scenario, that an  
14 aquifer maintenance credit would be subject to  
15 the District's safe yield regulation as defined  
16 in 5-22-7?

17 **MR. OLEEN:** I object, it calls for a  
18 legal conclusion.

19 **MR. STUCKY:** If I --

20 **PRESIDING OFFICER:** Could you  
21 rephrase based on what he would do in the  
22 scope of his job?

23 **MR. STUCKY:** Absolutely.

24 **BY MR. STUCKY:**

25 Q. And I'll revisit this for a moment. In your

1 credit mentioned anywhere in statute or  
2 regulation?

3 **A. No. We did, though, David, we -- we had our  
4 legal team and the City's legal team make a  
5 determination if we needed to change a  
6 regulation. We don't hesitate to change a  
7 regulation if we need to. And a determination  
8 was made by our chief legal counsel that we did  
9 not have to. But it was not like we didn't look  
10 at it. We sincerely looked at that question.**

11 Q. Was this based on, the legal team that looked at  
12 this, was this based on input from the City's  
13 legal team?

14 **A. Both, both. It's my understanding that both of  
15 our teams looked at it to see if we needed to  
16 make a regulation change.**

17 Q. Would you agree with me that Mr. Adrian heads up  
18 the legal team for the Equus Beds Groundwater  
19 Management District?

20 **A. Absolutely.**

21 Q. When this decision was made regarding whether an  
22 aquifer maintenance credit was a physical  
23 recharge credit from a legal standpoint, did you  
24 consider any input from the District's legal  
25 team as headed up by Mr. Adrian?

1 job, in the 33 years of your job, you have the  
2 occasion to apply statutes and regulations in  
3 your job to make a decision to decide whether or  
4 not a given statute or regulation applies to a  
5 water right application or a permit or things of  
6 that nature; is that correct?

7 **A. That's correct.**

8 Q. And so, in fact, when a regulation is -- is  
9 promulgated, you would look at that regulation  
10 and determine whether or not it would apply to a  
11 given water right; is that correct?

12 **A. That's correct.**

13 Q. And if an application comes before you, is one  
14 of the determinations that you would make to  
15 define whether or not safe yield would apply to  
16 that application?

17 **A. When does safe yield apply, is that --**

18 Q. Yeah, would you help -- if there was a new water  
19 right application --

20 **A. Yes.**

21 Q. -- you would try and determine if safe yield  
22 applied to that water right application; is that  
23 right?

24 **A. Well, safe yield applies to every new  
25 appropriation. It doesn't apply to term permits**



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1 or things like that, but it does apply to a new  
 2 appropriation under K.S.A. 82a-711.  
 3 Q. And so, in other words, if you were unsure  
 4 regarding whether or not safe yield applied,  
 5 would you pull up the applicable regulations or  
 6 statutes to try and help you to understand if a  
 7 given application was exempt from safe yield or  
 8 not?  
 9 **A. Yes.**  
 10 Q. And you would do your best to apply those  
 11 statutes and regulations to the application  
 12 itself; is that right?  
 13 **A. That's right.**  
 14 Q. So going back to our discussion a few moments  
 15 ago before the objection, I asked you that if we  
 16 were to assume for just a moment that Ms. Owen  
 17 says that an aquifer maintenance credit is not,  
 18 in fact, a physical recharge credit, would it be  
 19 your opinion --  
 20 **MR. MCLEOD:** I'm going to object  
 21 because I think that the issue is whether  
 22 it is a recharge credit, not a physical  
 23 recharge credit, which I think the witness  
 24 has established it's not a physical  
 25 recharge credit.

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1 **MR. OLEEN:** I join in that, and I  
 2 don't know if the GMD's counsel,  
 3 Mr. Stucky, I don't know if his terminology  
 4 is necessarily intentional, but I do want  
 5 to point out that the current regulations  
 6 do not define physical recharge credit  
 7 either; they just define recharge credit.  
 8 **MR. STUCKY:** I'll rephrase.  
 9 **BY MR. STUCKY:**  
 10 Q. If Ms. Owen were to determine that an aquifer  
 11 maintenance credit is not a recharge credit,  
 12 would you believe, then, under that scenario  
 13 that safe yield would apply to the City's  
 14 proposal that's before us today?  
 15 **A. They don't exist. AMCs -- if -- if Ms. Owen**  
 16 **makes recommendation to the chief engineer and**  
 17 **the chief engineer says AMCs are not a recharge**  
 18 **credit, then the recharge -- AMCs don't exist.**  
 19 Q. Okay. And if Ms. Owen made that determination,  
 20 it's your testimony that if she determines that  
 21 an aquifer maintenance credit does not fall  
 22 under the category of a recharge credit, you're  
 23 saying that the entire concept of an aquifer  
 24 maintenance credit would not exist?  
 25 **A. That's correct.**

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1 Q. To the extent that an aquifer maintenance credit  
 2 would at least still exist in theory, the  
 3 concept, we have a concept here we're talking  
 4 about that at least could still exist in theory,  
 5 to the extent that concept still existed, would  
 6 it -- would it be your opinion that safe yield  
 7 would apply to it?  
 8 **A. Not under the GMD's exemption because it**  
 9 **still -- I think, I don't have it in front of**  
 10 **me, but it says any application related to ASR,**  
 11 **and so an AMC is related to ASR so it's not**  
 12 **exempt from safe yield. But if Mr. Boese can**  
 13 **find that and put it in front of me.**  
 14 Q. I would ask --  
 15 **A. I don't think -- I don't -- I'm sorry if I**  
 16 **interrupted, I keep interrupting you, but I**  
 17 **don't believe their rule -- your rule relates to**  
 18 **a recharge credit. I think it says applications**  
 19 **related to aquifer storage and recovery. But**  
 20 **I -- but I can stand corrected.**  
 21 **MR. STUCKY:** May I approach the  
 22 witness?  
 23 **PRESIDING OFFICER:** Yes.  
 24 **A. Yeah, thank you. Thank you.**  
 25 **BY MR. STUCKY:**

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1 Q. Mr. Letourneau, if you would, could you read the  
 2 exemption that is listed in number 7 of this  
 3 regulation?  
 4 **A. Absolutely. It's an application for an aquifer**  
 5 **storage and recovery well.**  
 6 Q. And so in other words, it says an application  
 7 for an aquifer storage and recovery well, it  
 8 doesn't use the terminology related to. Is that  
 9 true, a true statement?  
 10 **A. Correct. Thank you.**  
 11 Q. Now, if we were to read the term related to back  
 12 out of the definition and we were to say that  
 13 this AMC concept, at least, exists in theory but  
 14 Ms. Owen has found that it's not a recharge  
 15 credit, would it be your belief, then, that safe  
 16 yield would apply?  
 17 **MR. MCLEOD:** I'm going to object  
 18 because I think what the witness's actual  
 19 testimony was was that in such an event it  
 20 would not exist as a concept, it would not  
 21 exist. If it's not a recharge credit, it  
 22 would not exist, that's what the witness  
 23 testified.  
 24 **MR. STUCKY:** And I guess my response  
 25 is I guess I'm having trouble understanding

1 how we have an entire proposal regarding a  
2 given concept, and I understand that if it  
3 doesn't fall under the definition of a  
4 recharge credit that it's illegal, per se,  
5 under that definition. But the concept  
6 itself would still exist in theory because  
7 we have an entire proposal that deals with  
8 that concept. And I'm drawing a  
9 distinction between it being illegal under  
10 that one definition versus the concept in  
11 theory still theoretically existing as a  
12 concept.

13 **PRESIDING OFFICER:** I think  
14 Mr. Letourneau has said, and the question  
15 was all phrased within the scope of his  
16 job, I think he has said what he would do  
17 in the event that I was to rule as you  
18 suggested -- or put forth in your  
19 hypothetical, so I think we can leave it at  
20 that.

21 It's 11:20, I don't want to interrupt if  
22 you're still in a line of questioning, but  
23 I'm wondering do we want to take a break,  
24 at least a ten-minute break, and decide how  
25 much longer to go today? Or do you have --

1 do you want to -- am I -- am I interrupting  
2 you topically, which I don't want to do?

3 **MR. STUCKY:** Maybe just a couple  
4 more questions on that point.

5 **PRESIDING OFFICER:** Okay. Go ahead.

6 **BY MR. STUCKY:**

7 Q. But if the City were to file a new application  
8 asking for additional water and it didn't fall  
9 within one of those exemptions, the City's new  
10 application would be subject to safe yield; is  
11 that right?

12 **A. Correct.**

13 Q. And I think what you were saying before is if an  
14 aquifer maintenance credit is not found to be a  
15 recharge credit, because it would be, per se,  
16 illegal, I wouldn't even analyze the safe yield  
17 statute because we wouldn't need to get that  
18 far. Is that your testimony?

19 **A. Yeah, and an AMC, an aquifer maintenance credit  
20 is just merely a change in accounting. It -- it  
21 would be part of the current 19,000 acre-feet  
22 that's approved, but if AMCs are allowed and the  
23 City would ask for AMC recovery from a ASR well,  
24 currently under the rules, those would not be  
25 subject to safe yield.**

1 **MR. STUCKY:** I'm ready to switch to  
2 a different line of questioning.

3 **PRESIDING OFFICER:** Okay. Let's  
4 take a quick ten-minute break, it's 11:20.

5 (Thereupon, a recess was taken;  
6 whereupon, the following was had.)

7 **PRESIDING OFFICER:** Okay. It's  
8 11:35, we're back on the record.

9 **BY MR. STUCKY:**

10 Q. Mr. Letourneau, you indicated to me that there  
11 is a GMD2 safe yield regulation. Would you at  
12 least agree that the initial determination with  
13 respect to whether or not an application or any  
14 kind of water right that is within the GMD2,  
15 would you agree that that initial determination  
16 would be made by the District?

17 **A. Well, yes. What happens in processing an  
18 application, the Division of Water Resources  
19 makes sure that that application is in proper  
20 form, does all of the nearby well notices. Then  
21 we send it to the Groundwater Management  
22 District, and they make a safe yield  
23 determination and other -- then look at their  
24 rules and regs to make a recommendation. I  
25 believe that's how it happens.**

1 Q. So would you agree that it would be part of the  
2 purview of Mr. Boese with the District to make  
3 an initial determination about whether or not  
4 safe yield applies?

5 **A. Yes.**

6 Q. Explain to me again the concept of basin -- of  
7 how water would be stored in the basin. Well,  
8 let me ask you this: Can you turn with me to  
9 Exhibit 20 of the deposition? I'd ask that you  
10 turn to page 63.

11 **A. Okay, I'm there.**

12 Q. Actually, turn to page 68.

13 **A. Okay.**

14 Q. On page 68, there's a answer that you gave to a  
15 question by Mr. Rolfs, he asked the question  
16 about the recharge basin, and at some point,  
17 your answer was, because like I said, I don't  
18 know how the City wants to manage that -- that  
19 recharge basin if AMCs are available, just  
20 because of the environment out there.

21 **A. Correct.**

22 Q. What did you mean by that statement?

23 **A. Well, we haven't fully vetted with the City how  
24 they're going to manage the recharge basin if  
25 AMCs are available, if -- because they could --**

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1 **if AMCs become available, the proposal is to**  
 2 **spread the aquifer maintenance credits across**  
 3 **the entire well field and then apply the 5**  
 4 **percent loss and the 5, 3, and 1 percent loss.**  
 5 **If they put all of their water into the basin**  
 6 **storage -- that recharge basin, they lose over**  
 7 **50 percent of that water to the river.**  
 8 Q. So is that a part of the City's proposal that's  
 9 still in the works and still needs to be  
 10 determined or decided in the future?  
 11 **A. Absolutely, we have not talked about how the**  
 12 **City wants to move forward with that recharge**  
 13 **basin.**  
 14 Q. So in other words, at least as we're sitting  
 15 here in this hearing process, you're not  
 16 propose -- you're not prepared to make a  
 17 recommendation in that regard because we don't  
 18 have enough discussion or analysis at this  
 19 point; is that right?  
 20 **A. That's right.**  
 21 Q. Yesterday and in the previous days of this  
 22 hearing, I had asked some questions about this  
 23 1 percent drought concept. Is that a part of  
 24 the City's proposal that you would consider  
 25 yourself qualified to answer questions on?

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1 **A. No. I mean, I know that the City's proposed the**  
 2 **1 percent drought, but I'm not a drought modeler**  
 3 **or anything like that.**  
 4 Q. I'll move on --  
 5 **A. Okay.**  
 6 Q. -- and strike that line of questioning. There's  
 7 been a discussion about the difference between,  
 8 on the one hand, accumulating an aquifer  
 9 maintenance credit on the one hand and on the  
 10 other hand, the concept of actually withdrawing  
 11 that water, that credit at a later time, there's  
 12 a distinction between the two, would you agree  
 13 with me?  
 14 **A. Absolutely.**  
 15 Q. And I believe that we've talked about the  
 16 benefits to the aquifer when an aquifer  
 17 maintenance credit is accumulated in the sense  
 18 that it leaves water in the aquifer, has that  
 19 been the testimony?  
 20 **A. Correct.**  
 21 Q. On the other hand, although the water, based on  
 22 the terminology of the City and based on your  
 23 terminology, has been left in the aquifer during  
 24 the accumulation of the aquifer maintenance  
 25 credit, would you at least agree with me at the

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1 point that the aquifer maintenance credit is  
 2 withdrawn, that water then could be withdrawn at  
 3 that point. Is that a true statement?  
 4 **A. Yes, the question can a recharge credit be**  
 5 **pumped, is that --**  
 6 Q. The question is if an aquifer maintenance credit  
 7 represents water left in storage --  
 8 **A. Correct.**  
 9 Q. -- when the aquifer maintenance credit is cashed  
 10 in, if you will --  
 11 **A. Okay.**  
 12 Q. -- we cash in the credits, at that point, the  
 13 water would be withdrawn; is that right?  
 14 **A. That's correct.**  
 15 Q. Is it true that the City could only withdraw  
 16 water accumulated under an aquifer maintenance  
 17 credit during a time of drought?  
 18 **A. That has not been worked out yet, that is one**  
 19 **thing that we do want to talk about. But then**  
 20 **again, when does the drought start?**  
 21 Q. Well, let me ask you this: In the City's  
 22 proposal as it -- as it exists now, does the  
 23 City say that we can only withdraw aquifer  
 24 maintenance credits during the time of a  
 25 drought?

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1 **A. No.**  
 2 Q. And, in fact, if you turn in your exhibit  
 3 notebook before you to Exhibit 11 --  
 4 **A. Oh, okay, I'm there.**  
 5 Q. -- and you turn with me to interrogatory  
 6 number 27 -- actually, I must be in the wrong  
 7 exhibit. That's a trick question, there is no  
 8 interrogatory 27. I'd ask that you turn to  
 9 Exhibit 12. I'm guessing that Mrs. Boese must  
 10 have put the exhibit number on that particular  
 11 one. If you go to Exhibit 12 and you look at  
 12 request for admission number 27, it states,  
 13 admit or deny that the proposed AMCs can only be  
 14 withdrawn by the City during a 1 percent  
 15 drought. Can you read for the record your  
 16 answer?  
 17 **A. Denied. Upon the AMC proposal, the withdrawal**  
 18 **of AMCs would not specifically be limited to a**  
 19 **1 percent drought -- to 1 percent drought**  
 20 **situations.**  
 21 Q. So in other words, under the AMC proposal, from  
 22 a conceptual standpoint, the City could withdraw  
 23 the AMC credits at any time in the sense that it  
 24 wouldn't have to be during a drought situation;  
 25 is that right?

1 **A. Correct, under this current proposal.**  
2 Q. And I believe to distinguish between what's in  
3 the current proposal and what you're saying on  
4 the other hand is maybe we should have more  
5 discussion about when these AMC credits can be  
6 withdrawn, whether it's during a drought,  
7 under -- under what situations they can be  
8 withdrawn, is that what you're testifying to  
9 today?  
10 **A. Yeah, I mean, it's sure worth a discussion with**  
11 **the City, definitely.**  
12 Q. Should the District be involved in that  
13 discussion?  
14 **A. Yeah, maybe.**  
15 Q. And I think you already testified to this, it's  
16 your belief that restrictions should be put on  
17 when water can be withdrawn under the AMC  
18 proposal; is that correct?  
19 **A. Can you remind me of the restrictions? We've**  
20 **talked a lot -- we've talked a lot, what were --**  
21 **can you remind me?**  
22 Q. Well, for example, it's your belief that the  
23 water can only be withdrawn after the City pumps  
24 their native credits; is that right?  
25 **A. Well, yes, I mean, that's not firmed up in**

1 part of the same process in your mind?  
2 **A. I don't think that that would require another**  
3 **hearing. I think we take the information from**  
4 **this hearing, work it out with the applicant and**  
5 **the Groundwater Management District to firm up**  
6 **how this should be operated, and I think those**  
7 **things could be worked out without a hearing,**  
8 **unless there's a big disagreement.**  
9 Q. I'll come back to that point later, but for now,  
10 I'd like to shift gears and talk about the  
11 concept of minimum index levels. If you could  
12 turn to page 2-23 of the City's proposal.  
13 **A. I'm there.**  
14 Q. There's a paragraph that is shown on page 2-23  
15 right above the summary, could you read for me  
16 the last two sentences of that paragraph?  
17 **A. The City is requesting that the last -- I'm**  
18 **sorry, the City is requesting that the proposed**  
19 **minimum index levels be applied to all existing**  
20 **ASR Phase II infrastructure, currently**  
21 **pending -- currently pending ASR applications,**  
22 **and potentially future ASR infrastructure.**  
23 **Modifications to the minimum index level on the**  
24 **permits covering ASR Phase I infrastructure are**  
25 **not being requested at this time.**

1 **conditions yet. I think it would behoove the**  
2 **City to do that because the recharge credits do**  
3 **not renew, where their native water rights do.**  
4 Q. So that's --  
5 **A. But that's not a firm permit condition yet.**  
6 Q. That's one example and you testified to that  
7 yesterday, so I'm just asking in a general  
8 sense, do you believe that there at least should  
9 be some conditions placed on when the water can  
10 be withdrawn in the form of an AMC credit?  
11 **A. I think so but then again too we don't want to**  
12 **tie any water users' hands too much.**  
13 Q. Is it true that the current position of the  
14 Division of Water Resources is that the  
15 determination of when and how the recharge  
16 credits can be withdrawn at a later time, is it  
17 your position that that's the subject of another  
18 hearing?  
19 **A. Can you ask me that again, David, I'm sorry?**  
20 Q. In this hearing, we've talked about the  
21 accumulation of aquifer maintenance credits an  
22 awful lot. My question is is it your belief  
23 that how and when these aquifer maintenance  
24 credits can be withdrawn, is that the subject  
25 for a separate hearing process, or is that all

1 Q. I want to break down that sentence just a little  
2 bit. What is existing ASR Phase II  
3 infrastructure, what's that referring to?  
4 **A. The current Phase II project.**  
5 Q. What is currently pending ASR applications,  
6 what's that referring to?  
7 **A. That was a group of applications that the City**  
8 **requested to be withdrawn. So there are no**  
9 **currently pending ASR applications.**  
10 Q. So -- so in other words, as it relates to the  
11 City's proposal, at least at this point, there's  
12 no pending ASR applications; is that right?  
13 **A. That's correct.**  
14 Q. So to the extent the City is asking that this  
15 proposed minimum index level be applied to any  
16 currently pending ASR applications, you would  
17 agree with me that there are none pending at  
18 this point, right?  
19 **A. That's correct.**  
20 Q. Okay. And, in fact, the language used by the  
21 City doesn't ask that this proposed minimum  
22 index level be applied to future ASR  
23 applications, would you agree at least the  
24 language in this sentence doesn't ask for that?  
25 **A. It does. The City's requesting be applied to**

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1 **existing, currently, and potentially future.**  
 2 Q. Well, let's reread that sentence. It says,  
 3 currently pending ASR applications, and then it  
 4 says, and potentially future ASR --  
 5 **A. Oh.**  
 6 Q. -- infrastructure. Is that the terminology  
 7 used?  
 8 **A. That's correct.**  
 9 Q. So at least as that sentence reads, the City  
 10 isn't asking that these minimum index levels be  
 11 applied to future ASR applications; is that  
 12 correct?  
 13 **A. That's correct.**  
 14 Q. So let me ask you this: What do you think is  
 15 intended by ASR infrastructure?  
 16 **A. I don't -- I don't know.**  
 17 Q. Mr. Letourneau, have you ever heard the idea of  
 18 ASR Phase III?  
 19 **A. It was talked about, but then the City really**  
 20 **said it's not Phase III, it was ...**  
 21 Q. Are you aware of any type of grant the City may  
 22 have applied for with the Bureau of Reclamation  
 23 in that regard?  
 24 **A. Vaguely. I mean, we -- we had just heard about**  
 25 **it in a meeting, but I don't know any other**

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1 **detail other than that.**  
 2 Q. So if I were to say ASR Phase III, do you  
 3 believe that that's what we're referring to?  
 4 **A. No, I -- I don't know what we're referring to**  
 5 **when you say Phase III.**  
 6 Q. Do you know what the subject of that grant  
 7 proposal was?  
 8 **A. I -- I don't know the subject -- I do know that**  
 9 **the City applied for a grant, but that's as much**  
 10 **as I know.**  
 11 Q. Yesterday there was a discussion about, I think  
 12 the terminology you used was a suite of water  
 13 rights. I'm going to call it a portfolio of  
 14 water rights the City has. If I were to refer  
 15 to a portfolio of water rights, do you know what  
 16 I'm referring to?  
 17 **A. Absolutely.**  
 18 Q. In other words, the City's portfolio of water  
 19 rights would apply to water from Cheney, water  
 20 from the Equus Beds Aquifer, water from the  
 21 Bentley reserve well field, other sources as  
 22 well, is that what the portfolio refers to?  
 23 **A. Yes.**  
 24 Q. You testified yesterday to a limitation or a  
 25 condition that the Division of Water Resources

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1 is going to recommend be applied to the City of  
 2 Wichita's portfolio of water rights. Do you  
 3 recall testifying to that yesterday?  
 4 **A. Absolutely.**  
 5 Q. And I think I missed that point, explain to me  
 6 what that condition is as it's applied to this  
 7 portfolio of water rights.  
 8 **A. Well, what we heard concern was that Wichita**  
 9 **ASR -- they -- Wichita wants to use ASR to build**  
 10 **additional water so they can add on customers**  
 11 **and bring in more industries and things. Well,**  
 12 **that really wouldn't, at its face value,**  
 13 **wouldn't be appropriate because recharge credits**  
 14 **are not annually renewed, they -- once a**  
 15 **recharge credit goes away.**  
 16 **But to try to sway folks from that fear, we**  
 17 **wanted to limit the recharge credit amount to**  
 18 **the overall portfolio of the City's water**  
 19 **rights. So it's not additional water, it's**  
 20 **just -- allows the flexibility when Cheney's not**  
 21 **available to get water from the Equus Beds well**  
 22 **field.**  
 23 Q. So in other words, do you believe that it would  
 24 be a good requirement of the City to essentially  
 25 force the City to withdraw from other available

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1 sources before the City was able to withdraw its  
 2 recharge credits?  
 3 **A. Well, I don't think we can force an owner of a**  
 4 **water right where they can take their water**  
 5 **from, I don't think that's -- we can't force**  
 6 **somebody to do that. But if you just look at it**  
 7 **with common sense, the City would take their**  
 8 **water rights first because those are renewable**  
 9 **every year. They would only want to take their**  
 10 **recharge credits when they absolutely had to**  
 11 **because those recharge credits are not**  
 12 **renewable.**  
 13 Q. Well, I want to back up for a moment, I may have  
 14 misunderstood what you said yesterday. I  
 15 thought you said it would be a permit condition  
 16 that the City would have to pump their 40,000  
 17 acre-feet of native water rights before they  
 18 would be able to pump --  
 19 **A. Okay.**  
 20 Q. -- their physical recharge credits?  
 21 **A. And that's a little bit different than what I**  
 22 **was just talking about. I thought you were**  
 23 **wanting us to say, well, you've got to use**  
 24 **Bentley and you've got to use Cheney before you**  
 25 **have to use your recharge credits. Now, from**

1 **the Equus Beds well field, if we get the bottom**  
2 **moved, then I think it is appropriate that we**  
3 **lay out the priority of pumping for the City.**

4 Q. And my -- yes, and there is a distinction  
5 between the two. So you're saying that when it  
6 comes to taking water out of the Equus Beds  
7 Aquifer, you can dictate that the City withdraw  
8 native credits first before they withdraw  
9 recharge credits, is that what you're saying?

10 **A. I don't know if we can dictate -- dictate that**  
11 **or not. I mean, I think a property right owner**  
12 **could challenge us on that, but I think it could**  
13 **be a permit condition that we agree to.**

14 Q. And so my question is if that's a permit  
15 condition that we can agree to as a threshold  
16 for this proposal to be adopted, what's the  
17 distinction here, why could it not be a permit  
18 condition that the City would also commit to  
19 utilizing other available sources, such as  
20 Cheney Reservoir, before they could withdraw an  
21 aquifer maintenance credit?

22 **A. We have just never done that to anybody before.**  
23 **We've never -- say a -- say a city -- well,**  
24 **city, feedlot, irrigator, if an irrigator's got**  
25 **two sources, we don't say you have to use that**

1 **in front of us.**

2 Q. So in other words, to the extent that that can  
3 be agreed to and to the extent that that can be  
4 made a permit condition, do you believe that  
5 that would be a good permit condition?

6 **A. Yeah, I think it would benefit the people in the**  
7 **aquifer, and it would benefit the City. But I**  
8 **don't know if we'd want to -- I don't know how**  
9 **tight we want to make this.**

10 Q. With respect to minimum index levels, would you  
11 agree with me that the Division of Water  
12 Resources did not perform any independent  
13 calculations or modeling with respect to the  
14 impact of lowering the minimum index levels?

15 **A. You know, again, I can't add -- I can't say what**  
16 **our modelers did; I can say they are a good**  
17 **group of modelers, and I'm confident in their**  
18 **work.**

19 Q. Mr. Letourneau, if you would, please turn to  
20 Exhibit 13 in the District's notebook. Could  
21 you turn with me to interrogatory number 13?  
22 And I'll read the interrogatory out loud for the  
23 record, and I'd ask that you read the first two  
24 sentences of the answer. This interrogatory  
25 states, please explain in detail what

1 **one first before that one, you know. So what**  
2 **the deal is there, we've just never done it**  
3 **before.**

4 Q. You said you've never done this before, let me  
5 ask you this: Has anybody else in your  
6 experience, in all the 33 years and the  
7 thousands of applications you've looked at, has  
8 anybody else besides the City of Wichita ever  
9 asked for an aquifer maintenance credit before?

10 **A. No, no, this is new.**

11 Q. So this is the first time for all of us; is that  
12 right?

13 **A. Correct.**

14 Q. Given the fact that this is a new concept, this  
15 is a first time and it doesn't matter what we've  
16 done previously because -- with respect to an  
17 aquifer maintenance credit because it's never  
18 been done before, is it possible then that we  
19 could, as a permit condition for the City of  
20 Wichita, could we add a permit condition that  
21 requires them to withdraw water from other  
22 available sources, such as Cheney Reservoir,  
23 prior to withdrawing an aquifer maintenance  
24 credit?

25 **A. We could, and that's even part of the proposal**

1 independent calculations or modeling was  
2 performed, if any, regarding the proposed  
3 lowering of the minimum index levels. Please  
4 read the two -- the first two sentences of the  
5 response.

6 **A. DWR can only speak for itself. DWR did not**  
7 **perform any such independent calculations or**  
8 **modeling.**

9 Q. So in other words, as you have refreshed your  
10 memory, would you at least agree with me that  
11 the Division of Water Resources, as stated in  
12 your -- in your sworn and verified answers,  
13 would you agree the Division of Water Resources  
14 did not do independent modeling or calculations  
15 with regard to lowering the minimum index  
16 levels?

17 **A. That's correct, but I have to qualify that**  
18 **because this is coming from a model that's**  
19 **already approved for the reporting of the**  
20 **accounting and operation of the ASR project. So**  
21 **an approved model, we're not going to do**  
22 **anything independent of something that's already**  
23 **approved.**

24 Q. Well, let me state this: Some of the -- we had  
25 a discussion about contingencies and we had a

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1 discussion of what the effects would be as we  
 2 lower water levels. I mean, there's  
 3 calculations that the City is relying on, and  
 4 there's modeling the City is relying on. Would  
 5 you agree with me?  
 6 **A. Yes.**  
 7 Q. And would you also agree with me that at least  
 8 we have encountered some discrepancies or errors  
 9 in some of those calculations and in that  
 10 modeling? Would you agree with me on that?  
 11 **A. I don't know if any errors in the modeling; I**  
 12 **know there's some errors in the numbers in the**  
 13 **report.**  
 14 Q. At least some of the calculations as they're  
 15 reported, would you agree there are some  
 16 discrepancies?  
 17 **A. Yes.**  
 18 Q. So in other words, do you think that there could  
 19 be some benefit now if the Division of Water  
 20 Resources were to go back and do some  
 21 independent calculations and some independent  
 22 modeling with respect to the impacts of lowering  
 23 the minimum index levels?  
 24 **A. I don't think we need to do any modeling, I**  
 25 **think we need -- because the modeling is -- that**

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1 **model's been approved for this. But I do --**  
 2 **again, we're willing to review those errors to**  
 3 **see how they im -- how those errors may have**  
 4 **impacted some outputs.**  
 5 Q. So in that sense, at this point, at least, are  
 6 you saying that perhaps some independent  
 7 calculations and some independent verification  
 8 should occur with respect to the effect of  
 9 lowering the minimum index levels?  
 10 **A. Yeah, we will review based on the errors that we**  
 11 **found, definitely.**  
 12 Q. Previously, I believe that you've stated that  
 13 lowering the minimum index levels, I think  
 14 you -- your terminology was, quote, not a large  
 15 change, end quote. Is that something that you  
 16 would have said in your deposition transcript?  
 17 **A. I don't recall, but ...**  
 18 Q. I would ask that you turn to Exhibit 20, your  
 19 deposition transcript.  
 20 **A. What page, David?**  
 21 Q. Let's go to page 59.  
 22 **A. Okay, I'm there.**  
 23 Q. I'll come back to that in just a moment.  
 24 Originally, we had a different version of this  
 25 transcript and we looked at it, and then

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1 sometime right before the -- shortly before the  
 2 hearing we got the verified version of this  
 3 transcript and all the lines and page numbers  
 4 were different. So we've done our best to try  
 5 and match up those lines and page numbers, but  
 6 I'll come back to that in just a second. I'm  
 7 not going to make others wait.  
 8 Can you turn to the Division of Water  
 9 Resources' responses to our second  
 10 interrogatories which are found in Exhibit 13?  
 11 **A. I'm there, yes.**  
 12 Q. With respect to the question on interrogatory  
 13 number 17, it's a long question, and there's  
 14 several subparts, and subpart 3 talks about  
 15 whether it will prejudicially and unreasonably  
 16 affect the public interest if one allows an  
 17 unreasonable raising or lowering of the water  
 18 level. With respect to your answer on  
 19 subsection 3, at the very bottom of that page,  
 20 could you read the answer, that first sentence?  
 21 **A. The first sentence? Although Wichita proposes**  
 22 **to lower the minimum index levels to levels**  
 23 **lower than they were in 1993, the proposed new**  
 24 **levels are not a -- not that significant**  
 25 **compared to the practical saturated thickness of**

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1 **the aquifer.**  
 2 Q. So in other words, the drop in the -- from the  
 3 existing minimum index levels to the proposed  
 4 minimum index levels as stated, at least in this  
 5 interrogatory answer, the position of the  
 6 Division of Water Resources was that it's,  
 7 quote, not that significant, end quote. Is that  
 8 what was stated there?  
 9 **A. That's correct.**  
 10 Q. And if I were to tell you that in your  
 11 deposition testimony, and I believe I can find  
 12 it here in just a few seconds, if I were to tell  
 13 you -- well, actually, I'll ask you to go to  
 14 page 60 of your deposition testimony, let's just  
 15 go ahead and create a record.  
 16 **MR. OLEEN:** I kind of object here,  
 17 are we -- why aren't we asking the witness  
 18 a question orally? We're reading in all  
 19 his previously given answers without  
 20 suggesting that he has given a different  
 21 answer here today?  
 22 **MR. STUCKY:** I'll ask the question  
 23 in a different way to satisfy Mr. Oleen.  
 24 **BY MR. STUCKY:**  
 25 Q. Would you agree that you previously said that

1 the drop in the minimum index level from the  
2 existing minimum index level to the proposed  
3 minimum index level, would you agree that you  
4 have said, quote, we didn't see a large change,  
5 end quote?  
6 **A. Yeah, there's not -- there's not a lot of change**  
7 **to that aquifer.**  
8 Q. So my question is this --  
9 **MR. MCLEOD:** Madam Hearing Officer,  
10 I'm -- I'm going to call this a soft  
11 objection, but it's in line with  
12 Mr. Oleen's objection, it seems like we're  
13 spending an awful lot of time taking  
14 discovery material that's already been  
15 admitted and having the witness orally  
16 repeat that same material very  
17 cumulatively; and we're spending a lot, a  
18 lot of time doing this, and I don't see the  
19 productive use here.  
20 **MR. STUCKY:** I'll focus in.  
21 **BY MR. STUCKY:**  
22 Q. So previously you had indicated that this drop  
23 in the minimum index level was not that  
24 significant, it wasn't that large. However, is  
25 your testimony still today that a drop in the

1 minimum index levels, which are anywhere from 9  
2 to 23 feet in their drop, that's what the  
3 testimony says, right?  
4 **A. Correct.**  
5 Q. Is your testimony, as you're sitting here still  
6 today, that the drop in the minimum index level  
7 from 9 to 20 -- anywhere from 9 to 23 feet is  
8 not that significant?  
9 **A. I -- with how much aquifer is there, a 20-foot**  
10 **drop in the aquifer is not that significant.**  
11 **Wichita County has 19 feet of saturated**  
12 **thickness, for example, and --**  
13 Q. Wichita County?  
14 **A. Wichita County. I mean, I'm just saying there's**  
15 **people that operate with a lot less saturated**  
16 **thickness than what we have here. We're --**  
17 **we're very, very blessed -- we're very, very**  
18 **blessed in this part of the state to have this**  
19 **much saturated thickness, and it recharges.**  
20 Q. So at least for today's purposes, you've read  
21 some of the expert opinions or -- and heard some  
22 of the testimony of some of the District's  
23 experts, that hasn't changed your opinion as far  
24 as whether the drop in the minimum index level  
25 is significant or impactful, if you will?

1 **A. No, not yet it hasn't. But we still -- but I**  
2 **think there's going to be more GMD2 experts that**  
3 **testify.**  
4 Q. Mr. Letourneau, prior in your career, you would  
5 have -- you worked for an oil company at one  
6 point; is that right?  
7 **A. Well, it was an oil -- it was an oil well**  
8 **logging company. I logged oil wells.**  
9 Q. So in other words, when you log oil wells, you  
10 would have looked at well log data; is that  
11 right?  
12 **A. Absolutely.**  
13 Q. And you looked at well log -- would you have  
14 looked at well log data both for the purposes of  
15 drilling an oil well and for the purposes of  
16 determining what water existed in that well log?  
17 **A. You look -- correct, you look to see the**  
18 **difference in water and oil in the well.**  
19 Q. So you would have an understanding of how to  
20 interpret a well log and what the numbers in a  
21 well log would mean; is that right?  
22 **A. Yes.**  
23 Q. And, in fact, based on your experience working  
24 with oil companies and also based on your years  
25 of experience with the Division of Water

1 Resources, you've probably looked at a lot of  
2 water well logs; is that right?  
3 **A. I -- yes, I mean -- yes.**  
4 Q. Would you be able to look at a water well log,  
5 for example, and tell me where bedrock is in the  
6 water well log?  
7 **A. If marked appropriately, yes.**  
8 Q. Would you be able to tell me, for example, by  
9 looking at a well log where the water starts, if  
10 you will, in the given well?  
11 **A. Yes, if marked appropriately.**  
12 Q. Yesterday there was a discussion about saturated  
13 thickness; is that correct?  
14 **A. Correct.**  
15 Q. There was also a distinction drawn between -- by  
16 two of the City's witnesses, a distinction drawn  
17 between saturated thickness on one hand and  
18 practical saturated thickness on the other hand.  
19 Would you also agree with that distinction?  
20 **A. Yes.**  
21 Q. So in other words, just because on paper we see  
22 that we have 100 feet of available water in a  
23 given well, when we factor in practical  
24 saturated thickness and clay layers, for  
25 example, all that water may not be available; is



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1 that right?

2 **A. That's correct.**

3 Q. So when you're trying to -- from all your years

4 of experience working with oil companies,

5 working for the City of Wichita, when you were

6 trying to determine practical saturated

7 thickness, would you exclude the clay layers,

8 for example?

9 **A. Well, in the oil -- in the oil field, you don't**

10 **look at saturated thickness, in the oil field.**

11 **You look at -- you look for zones that produce**

12 **oil. In -- but water wells, yes, you do look at**

13 **the practical saturated thickness.**

14 Q. And so if you're looking at a water well log and

15 you're trying to determine practical saturated

16 thickness, would you exclude the clay layers?

17 **A. Yes, for practical -- a perfect example, it's**

18 **100 feet of saturated thickness, you find**

19 **50 feet of clay, you have 50 feet of practical**

20 **saturated thickness.**

21 Q. Are there, other than the clay layers, are there

22 other layers that you would exclude?

23 **A. You could, yeah, shale, clay, anything -- any**

24 **non-water-bearing formation.**

25 Q. So if someone was attempting to drill a well and

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1 we had a well log, for example, and bedrock was

2 at 100 feet and the clay layers started at

3 50 feet, would you recommend for that individual

4 to drill 75 feet down?

5 **A. Where is the clay layer?**

6 Q. The clay layer starts at 50 feet, would you

7 recommend they drill all the way down to

8 75 feet?

9 **A. Well, it depends on what's below -- and I'm not**

10 **trying to be difficult here, it's just what is**

11 **below the clay layer? I mean, we would look at**

12 **other well logs to see if there is a water**

13 **bearing formation below that clay layer.**

14 Q. Let's clarify the question. Let's assume for a

15 moment bedrock is at 100 feet --

16 **A. Okay.**

17 Q. -- clay starts at 50 feet, and a clay layer

18 continues all the way to bedrock.

19 **A. Oh, okay.**

20 Q. Under that scenario, if you're recommending that

21 someone -- how deep someone should spend the

22 money to drill a well, would you recommend that

23 they drill all the way down to 75 feet?

24 **A. No, about 52 feet.**

25 Q. And the reason why you wouldn't recommend that

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1 they drill all the way down to 75 feet is

2 because there's clay down there; is that

3 correct?

4 **A. That's correct.**

5 Q. Now let's turn to table 2-9.

6 **PRESIDING OFFICER:** If this is a

7 little bit different line of questioning,

8 could this be our lunch break?

9 **MR. STUCKY:** Sure.

10 **PRESIDING OFFICER:** It's about

11 12:15, let's be back by 1:00 o'clock. And

12 if we're ready before that, we'll start

13 before that. Thank you.

14 (Thereupon, a lunch recess was

15 taken; whereupon the following was

16 had.)

17 **PRESIDING OFFICER:** Okay. It is now

18 1:00 o'clock, and we are back on the

19 record. Mr. Stucky.

20 **BY MR. STUCKY:**

21 Q. Mr. Letourneau, just before we took a break, I

22 was asking you some questions about saturated

23 thickness versus practical saturated thickness,

24 do you recall those -- those questions?

25 **A. Yes.**

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1 Q. Yesterday I asked the City's witness,

2 Mr. McCormick, some questions about table 2-9,

3 table 2-11, figure 10, and figure 11 with regard

4 to practical saturated thickness. The question

5 I asked with respect to each of those tables and

6 figures that I mentioned was do those tables and

7 figures take into account modeled results, and

8 the answer was yes. Do you remember that line

9 of questioning?

10 **A. Yes.**

11 Q. And with respect to each of those figures and

12 with respect to each of those tables, I asked if

13 those tables and figures took into account

14 actual well data that was looked at by the City

15 of Wichita, and the answer was no. Do you

16 recall that question as well?

17 **A. Yes.**

18 Q. And I also asked the question about whether or

19 not those figures and tables took into account

20 practical saturated thickness, and the answer

21 was also no. Do you recall that line of

22 questioning?

23 **A. Yes.**

24 Q. As you're sitting here today, do you also agree

25 that those tables and figures deal with modeled

1 results and not actual well log data?  
2 **A. If -- if it was a MODFLOW model, the MODFLOW**  
3 **model takes into account well logs.**  
4 Q. Would you agree, though, that there could be a  
5 difference between modeled results and actual  
6 well log data?  
7 **A. Yes.**  
8 Q. And just for clarity, table 2-9 applies to the  
9 entire basin storage area, and figure 10 applies  
10 to individual index cells. Is that one of the  
11 differences between the two?  
12 **A. Yes.**  
13 Q. And table 2-11 deals with the proposed saturated  
14 thickness; whereas, figure 11 deals with the  
15 model -- modeled results for each index cell.  
16 Would that be an accurate statement?  
17 **A. I'm sorry, David, can you ask that again?**  
18 Q. Just a quick refresher, table 2-11 deals with  
19 the proposed minimum index level and the  
20 corresponding saturated thickness, and figure 11  
21 deals with the modeled results for each index  
22 cell; is that correct?  
23 **A. Correct.**  
24 Q. In the District's notebooks, I would ask that  
25 you flip to Exhibit 60. It's in Volume IV for

1 the record. And then also just for simplicity,  
2 can you open Volume Number VI and flip to  
3 Exhibit 80? Keep both of those exhibits open  
4 before you.  
5 **A. Well -- oh.**  
6 Q. Do you have both of those exhibits before you?  
7 **A. I do.**  
8 Q. And then I think you were already in the  
9 proposal on table 2-10, hopefully. Those are  
10 the three that I would like you to have open  
11 before you.  
12 **A. Okay.**  
13 Q. In Exhibit 80 -- or, I'm sorry, it's Exhibit 60,  
14 on the first page of Exhibit 60, would you agree  
15 that what we merely see is a map listing all the  
16 index cells that are being considered here  
17 today, would you agree with that?  
18 **A. I agree.**  
19 Q. And on the next page of Exhibit 60, there's a  
20 hydrograph; is that correct?  
21 **A. That's correct.**  
22 Q. And would you agree that, at least as it's  
23 stated, this hydrograph is for index well 1C?  
24 **A. Yes.**  
25 **MR. MCLEOD:** Sorry, can we have some

1 foundation for the exhibit, where it came  
2 from and who created it? And if this is  
3 the exhibit that was replaced Monday, can  
4 we have some discussion of the differences  
5 between the original exhibit and the  
6 correction?  
7 **MR. STUCKY:** There was one -- it's  
8 something that nobody ever would have  
9 caught, there was one data point, I believe  
10 in one of the hydrographs, it was actual --  
11 it includes actual measured well data  
12 for -- that the Equus Beds Groundwater  
13 Management District would have accumulated  
14 over time, and we're going to have later  
15 foundation for this particular exhibit.  
16 So if -- my suggestion is certainly this  
17 exhibit, we're going to have great  
18 foundation laid out when the District's  
19 experts testify here in the future, and  
20 they can testify in greater detail to the  
21 foundation that went into generating this  
22 exhibit, but my suggestion is that we be  
23 allowed to use it and let this witness look  
24 at it subject to later foundation.  
25 **PRESIDING OFFICER:** So you won't be

1 requesting to admit it at this point?  
2 **MR. STUCKY:** I will only request to  
3 admit it subject to later foundation  
4 established.  
5 **PRESIDING OFFICER:** That's fine.  
6 **MR. MCLEOD:** Can we at least have an  
7 indication of who originated it?  
8 **MR. STUCKY:** The Groundwater  
9 Management District No. 2, it's identified  
10 at the bottom of that hydrograph. May I  
11 proceed?  
12 **PRESIDING OFFICER:** Yes, sorry.  
13 **BY MR. STUCKY:**  
14 Q. With respect to this hydrograph for well IW1C,  
15 on that hydrograph, we see the minimum drought  
16 model elevations. If I were to say that the  
17 minimum drought model elevations for this index  
18 cell is 1,429.14 feet and I were to point you to  
19 the corresponding portion of the City's table in  
20 their proposal that has that number, would you  
21 have reason to disagree with this?  
22 **A. No.**  
23 Q. And if I were to tell you also that with respect  
24 to index well 1C the existing minimum index  
25 level, as shown in red, is 1,413.42 feet, would

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1 you have reason to disagree with that number?  
 2 **A. No.**  
 3 Q. And if I were to tell you that with respect to  
 4 the proposed minimum index level, the proposed  
 5 minimum index level would drop it down to  
 6 1,390 feet, would you have reason to disagree  
 7 with that number?  
 8 **A. No.**  
 9 Q. And, in fact, the difference between the red and  
 10 the green line, if we subtract 1,390 from  
 11 1,413.42 feet, indeed, we get the 23 feet and  
 12 some change that is shown in the first row of  
 13 table 2-10; is that right?  
 14 **A. That's correct.**  
 15 Q. So if I were to tell you that the numbers used  
 16 in this hydrograph, at least with respect to  
 17 line -- the blue, red, and green line, if I were  
 18 to tell you that those were numbers that were  
 19 derived from the City's proposal and model,  
 20 would you agree with that statement?  
 21 **A. Yes.**  
 22 Q. Now, the black line, we'll have further  
 23 testimony on that in the future, the black line  
 24 is actual measured levels in the City's  
 25 monitoring well in that index cell, and we'll

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1 have testimony on that later, but at least with  
 2 respect to the three lines in question, those  
 3 come out of the City's proposal, true?  
 4 **A. Yes.**  
 5 Q. Now I would ask that you turn to Exhibit 80.  
 6 **A. Okay.**  
 7 **MR. STUCKY:** And I would ask that we  
 8 be allowed, just for the simplicity of this  
 9 record, be allowed to admit Exhibit 60  
 10 subject to laying a further foundation?  
 11 **PRESIDING OFFICER:** Well, let's just  
 12 do that at that time.  
 13 **MR. STUCKY:** Okay.  
 14 **BY MR. STUCKY:**  
 15 Q. With respect to -- if we could turn to  
 16 Exhibit 80. Do you recognize Exhibit 80? And  
 17 first of all, look at the top right-hand portion  
 18 of that document, are you able to identify  
 19 what -- and specifically the first nine pages of  
 20 Exhibit 80, 1 through 9 and --  
 21 **MR. STUCKY:** May I approach the  
 22 witness?  
 23 **PRESIDING OFFICER:** Yes.  
 24 **BY MR. STUCKY:**  
 25 Q. Mr. Letourneau, I would ask that you flip

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1 through the first nine pages of Exhibit 80.  
 2 **A. Okay.**  
 3 Q. Do you recognize what this document is?  
 4 **A. Yes.**  
 5 Q. What is this document?  
 6 **A. It is a, what's called a WWC-5 form, it's a**  
 7 **drilling log, a driller's log.**  
 8 Q. And does this appear to be a drilling log for  
 9 IW1C, which would be located -- would be the  
 10 monitoring well of the City in index cell 1?  
 11 **A. Actually, at the top of this it says IW21C.**  
 12 **MR. STUCKY:** May I approach the  
 13 witness?  
 14 **PRESIDING OFFICER:** Yes.  
 15 **A. But after those nine, David, I just saw it, IW1C**  
 16 **is behind these first group of pages. If you**  
 17 **want to look at this.**  
 18 **BY MR. STUCKY:**  
 19 Q. Mr. Letourneau, I'm going to trade books with  
 20 you just --  
 21 **A. Okay.**  
 22 Q. -- for a moment, and I'm going to have the well  
 23 logs put in the correct order in the official  
 24 notebook for this -- for this hearing, if I may.  
 25 **MR. STUCKY:** May I do that,

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1 Ms. Owen?  
 2 **PRESIDING OFFICER:** What would the  
 3 correct order be?  
 4 **MR. STUCKY:** We would have IW1C  
 5 first, IW2C second, IW10C third, and IW21C  
 6 last. Is that the order in others'  
 7 notebooks? My thinking -- the reason why  
 8 they're not ordered correctly in that  
 9 particular notebook is that they were taken  
 10 out and scanned, and so I'm thinking that's  
 11 the only reason they were reordered in that  
 12 notebook. And so what I'm trying to  
 13 determine is if everybody else's is in the  
 14 correct order?  
 15 **PRESIDING OFFICER:** I have 1, 2, and  
 16 10, but 21 was in front. So now 21 goes  
 17 behind those?  
 18 **MR. STUCKY:** Yes.  
 19 **A. Okay. I can -- I can fix that.**  
 20 **BY MR. STUCKY:**  
 21 Q. Okay. I would ask to start out, Mr. Letourneau,  
 22 it looks like you have found nine pages that  
 23 correspond with IW1C; is that right?  
 24 **A. Yes.**  
 25 Q. Can you tell me what that document is as it

1 relates to IW1C?  
2 **A. IW1C, it's a WWC-5 form, which is a drilling**  
3 **log.**  
4 Q. Would that be a drilling log for the monitoring  
5 well that the City has in index cell 1?  
6 **A. If IW1C is -- yes.**  
7 Q. And, in fact, if we were to flip through this --  
8 this drilling log, you would be able to see that  
9 this was a drilling log that was requested by  
10 the City of Wichita; is that right?  
11 **A. Yes.**  
12 Q. Would you agree that this is the official  
13 drilling log for IW1C, which was the City's  
14 monitoring well in index cell 1?  
15 **A. Yes.**  
16 **MR. STUCKY:** I would ask that at  
17 least this portion of Exhibit 80 be  
18 admitted into evidence.  
19 **PRESIDING OFFICER:** Any objection?  
20 **MR. MCLEOD:** Does Counsel want to  
21 mark it separately? I'm not sure how else  
22 we would go about admitting a portion of an  
23 exhibit.  
24 **MR. STUCKY:** Well, I would ask, to  
25 just speed this up, if I were to proffer

1 well data, as you flip through them, do those  
2 appear to be the official well logs and official  
3 well records for the corresponding monitoring  
4 wells in the given index cells that are  
5 represented?  
6 **A. Yes.**  
7 **MR. STUCKY:** I would ask that  
8 Exhibit 80 be admitted into evidence.  
9 **MR. OLEEN:** And then my only  
10 remaining request is someone mentioned  
11 index well 21, Madam Hearing Officer. I  
12 have documents for well 1, 2, 10. Unless  
13 I'm missing it, I don't see a 21, a 21  
14 report.  
15 **MR. STUCKY:** Is it okay if Mr. Boese  
16 approaches Mr. Oleen?  
17 **PRESIDING OFFICER:** Yes, let's try  
18 and help clear this up.  
19 **MR. STUCKY:** Just to speed this up.  
20 Can I --  
21 **MR. OLEEN:** Subject to me getting  
22 number 21, and I presume that the witness  
23 has a copy of 21, then I don't have an  
24 objection.  
25 **MR. STUCKY:** Thank you.

1 that we have four different drilling logs  
2 and they'll correspond to a different  
3 monitoring well of the City and four  
4 different index cells and Mr. Letourneau  
5 can testify to the same thing with respect  
6 to each one, with that proffer in mind, I  
7 would ask to just admit Exhibit 80.  
8 **PRESIDING OFFICER:** Any objections  
9 to that?  
10 **MR. MCLEOD:** No objection here.  
11 **MR. OLEEN:** I'm sorry, I don't  
12 understand Mr. Stucky's proffer. We are  
13 admitting all of 80's documents or not?  
14 **MR. STUCKY:** Yes.  
15 **MR. OLEEN:** Based on what proffer or  
16 what --  
17 **MR. STUCKY:** Based on the fact that  
18 Mr. Letourneau could testify with respect  
19 to each one of those index wells, that they  
20 are the official well logs and the official  
21 well data.  
22 **MR. OLEEN:** If he thinks that's the  
23 case, then -- has he said that's the case?  
24 **BY MR. STUCKY:**  
25 Q. As you flip through those well logs and that

1 **PRESIDING OFFICER:** Okay. 80 will  
2 be admitted.  
3 **BY MR. STUCKY:**  
4 Q. I would ask that you look -- you look at this  
5 well log that exists for the official monitoring  
6 well of the City in index cell 1. Toward the  
7 bottom of this document, there's some data that  
8 was found by the well driller; is that correct?  
9 With -- with regard to what was in the different  
10 layers of the soil, if you will?  
11 **A. Are you talking about the lithologic log?**  
12 Q. Yes.  
13 **A. Yes.**  
14 Q. And what exactly is a lithologic log?  
15 **A. It -- it describes the lithology in the well**  
16 **based on the drilling of it, what you drill**  
17 **through.**  
18 Q. And based on your degree in geology, a  
19 lithologic log is right in your wheelhouse; is  
20 that correct, Mr. Letourneau?  
21 **A. Well, I mean, I know about them. I don't know**  
22 **about my wheelhouse.**  
23 Q. Previously, you indicated that clay layers  
24 should be excluded from saturated thickness.  
25 When we're trying to determine practical

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1 saturated thickness, we should exclude clay  
 2 layers; is that correct?  
 3 **A. Maybe not all of them, I mean, some clays can**  
 4 **give up water, but if it's a clay that says here**  
 5 **hard, it's probably not going to give up much**  
 6 **water. But some clays can give out a little bit**  
 7 **of water.**  
 8 Q. Okay. As we look at this well log, from 2 to  
 9 13 feet in this well log, we see that it was a  
 10 clay, tan and white, sandy layer; is that right?  
 11 **A. That's correct.**  
 12 Q. From 13 to 45 feet in this log, we see that it  
 13 was sand, fine, very fine sand, so that sand  
 14 probably would have yielded water; is that  
 15 correct?  
 16 **A. Maybe. I mean, it's very fine sand so it --**  
 17 **it's just based -- it's based on as you go**  
 18 **through those layers, depending on what those**  
 19 **may give up.**  
 20 Q. And the next layer -- well, let me just say  
 21 this, in at least 45 to 56 feet, we're seeing  
 22 the start of a clay layer; is that correct?  
 23 **A. Yes.**  
 24 Q. And in 56 to 72 feet, it identifies the feared  
 25 clay, white, hard clay layer that you indicate

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1 would generate no water; is that correct?  
 2 **A. That could generate no water but ...**  
 3 Q. And then from 72 to 82 feet, we also see clay  
 4 mentioned that's hard; is that correct?  
 5 **A. That's correct.**  
 6 Q. But then when we go from 82 to 103 feet, once  
 7 again, we see sand and gravel that's medium,  
 8 fine, very fine; is that right?  
 9 **A. That's correct.**  
 10 Q. And so would we expect that at least from 82 to  
 11 103 feet, there's a potential to yield water?  
 12 **A. Yes.**  
 13 Q. And then at 103 to 105 feet, it indicates that  
 14 we hit the shale, the bedrock layer; is that  
 15 right?  
 16 **A. That's correct.**  
 17 Q. So in other words, if you were looking at this  
 18 particular well log that's located in index cell  
 19 1, what would you say the practical saturated  
 20 thickness is based on looking at this well log?  
 21 **A. Probably 30 feet.**  
 22 Q. Okay. Now, I would ask with that number in  
 23 mind, we go back to Exhibit 60. Comparing index  
 24 well 1C, the City's official monitoring well in  
 25 index well -- in index cell 1 with what's found

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1 with the corresponding hydrograph for IW1C, if  
 2 we look at where the existing minimum drought  
 3 model elevation as shown in blue, would you  
 4 agree that that is already below what is shown  
 5 as the first sand layer in this well log?  
 6 **A. Yes.**  
 7 Q. In other words, where the water level already is  
 8 is below where that first sand layer is with  
 9 respect to index cell 1; is that right?  
 10 **A. Yes.**  
 11 Q. Now, we look at the -- where on this  
 12 hydrograph -- now let's look at this yellow  
 13 line, there is a yellow line on this hydrograph,  
 14 or an orange line for the record that's shown at  
 15 the very bottom of this hydrograph. That shows  
 16 an approximate bedrock elevation of  
 17 1,371.05 feet for IW1C. Would you agree that  
 18 that drop of 102 feet was pulled directly from  
 19 this well log that we just looked at?  
 20 **A. Yes.**  
 21 Q. So as we're looking at what that practical  
 22 saturated thickness is, would it be your belief  
 23 that at least with respect to this monitoring  
 24 well and the location of this monitoring well,  
 25 we only have a practical saturated thickness of

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1 30 feet; is that right?  
 2 **A. Yes, I think that's -- yes.**  
 3 Q. And in other words, if we were to look at the  
 4 well log and let's say for -- just for example  
 5 what you said earlier was true that all clay  
 6 layers can be excluded and we assume that the  
 7 only place in this particular well log where we  
 8 can monitor -- I'm sorry, where we can yield  
 9 water is between 82 feet and 103 feet where sand  
 10 and gravel is found, would that create a  
 11 practical saturated thickness of only 19 feet in  
 12 this monitoring -- or 21 feet, I'm sorry,  
 13 21 feet?  
 14 **A. Well, 21 if that's the only zone that you have**  
 15 **picked. I don't know if that's appropriate**  
 16 **without -- without drilling it and knowing what**  
 17 **those other layers may give out. That is,**  
 18 **though, without a doubt, according to this log,**  
 19 **the best zone in this well.**  
 20 Q. So based on your professional opinion and your  
 21 experience as -- in having looked at water well  
 22 logs, your best guess is there's maybe 30 feet  
 23 of practical saturated thickness?  
 24 **A. At a maximum.**  
 25 Q. If we then compare this information to figure 10

1 of the City's proposal -- I'm sorry, let's go to  
2 figure -- yes, figure 10 of the City's proposal,  
3 let's start there. In figure 10, let's look at  
4 index well -- or index cell 1 shown in the upper  
5 left-hand portion. The saturated thickness  
6 shown there, which is the average saturated  
7 thickness for the entire index cell, what's  
8 shown there is 163 feet as the average saturated  
9 aquifer thickness in that cell; is that right?

10 **A. That's correct.**

11 Q. And I understand that that's an average for the  
12 whole cell, but at least as we compare it to the  
13 City's monitoring well that's located -- the  
14 official monitoring well located in that index  
15 cell, would you agree that there's a big  
16 difference between 30 feet of practical  
17 saturated thickness and the purported average  
18 saturated thickness from the model data, which  
19 shows 163 feet, would you agree there's at least  
20 a difference in those numbers?

21 **A. Yes. But the location of that particular index  
22 well, that monitoring well is to the extreme  
23 north of that, so it looks like it's probably at  
24 the very edge of the aquifer. I wouldn't expect  
25 that well to be very good.**

1 Q. But at least even -- well, how big is an index  
2 cell, tell me that again.

3 **A. You can see, I don't -- I don't know exactly.  
4 They're large.**

5 Q. Is it roughly a two -- look at the bottom of  
6 this figure 10, it shows miles and it shows  
7 two miles at the bottom.

8 **A. Roughly two by two, yes.**

9 Q. Yes. Is it a, basically a four-square-mile  
10 area?

11 **A. That looks like it, yes.**

12 Q. So we're not talking, you know, dozens of miles  
13 apart, we're talking within a mile potentially  
14 of -- within a couple miles of any given spot in  
15 an index cell; is that right?

16 **A. Yeah, it looks like the next monitoring well,  
17 though, is four miles away, right? At least  
18 two miles away. So the model is probably  
19 looking at wells two miles apart and then trying  
20 to draw data from both of those and data points  
21 and establishing levels between --**

22 Q. Let me ask you this: When we have a difference  
23 between what's been identified as 163 feet of  
24 saturated thickness left in the aquifer and we  
25 look at the one monitoring well that the City

1 has in place and we find that it's only 31 -- or  
2 maybe 30 feet of saturated thickness, does that  
3 at least give you some cause for concern?

4 **A. Sure, yes.**

5 Q. And, in fact, does it give you enough cause for  
6 concern that if you were to go back to your  
7 modeling team that you might ask them to say,  
8 you know what, you guys might want to look at a  
9 few actual well logs in this cell to make sure  
10 that the City's numbers are correct?

11 **A. I would ask -- ask the modelers if the MODFLOW  
12 model took into account well logs already.**

13 Q. And that question's already been answered,  
14 correct? In fact, you answered it for me  
15 earlier, which was the modelers did not -- all  
16 the modelers that testified indicated that they  
17 did not personally look at well logs. Do you  
18 recall that testimony?

19 **A. Yes.**

20 Q. So now if you're making a recommendation, you  
21 have a large agency here, you have the Division  
22 of Water Resources that's charged with making  
23 policy for all constituents and water users, as  
24 you're going back to your agency, would you say,  
25 you know what, there's a big difference between

1 30 feet of practical saturated thickness shown  
2 in a monitoring well within that index cell and  
3 the touted 131 feet showed by modeled results,  
4 would you say perhaps we should go back and look  
5 at some well logs at this point?

6 **A. I would definitely take back the concern. I  
7 would have added one thing to your description  
8 saying the one well log to the very north edge,  
9 because in this -- I just thumbed through  
10 this -- your hydrographs, this is a pretty  
11 bad -- I mean, this well is not a very good  
12 well; but when I looked at the other ones as  
13 we're going through there, the lines are a lot  
14 closer as we get into the middle of this. And  
15 so I'm looking at this, the remaining wells  
16 don't cause me near as much concern as this one.**

17 Q. Okay.

18 **A. I will say that.**

19 Q. And we'll talk about a few more examples here in  
20 just a moment --

21 **A. Okay.**

22 Q. -- Mr. Letourneau.

23 **A. Oh, and I don't -- I don't mean to speak out of  
24 turn.**

25 Q. No, that's just fine, you can always clarify --

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1 **A. Okay.**  
 2 Q. -- any of my questions. So figure 10 looks at  
 3 the individual index cells, and figure -- figure  
 4 10 is looking at the drought modeled results and  
 5 how that affects each index cell, and figure 11  
 6 is looking at the effect -- the effect of  
 7 lowering the minimum index level; is that right?  
 8 **A. Yes.**  
 9 Q. Okay. So if we flip, then, to figure 11, which  
 10 is the impact of lowering the minimum index  
 11 level, there's 131 feet of saturated thickness  
 12 shown; is that correct?  
 13 **A. That's correct.**  
 14 Q. And if we flip back to figure 10, in index cell  
 15 1, there's 163 feet of saturated thickness  
 16 shown; is that right?  
 17 **A. That's correct.**  
 18 Q. Either way, whether we're talking about 163 feet  
 19 versus 131 feet, we're talking over a 100-foot  
 20 difference between what you identified as the  
 21 practical saturated thickness shown in that  
 22 monitoring well versus the saturated thickness  
 23 identified by the City; is that correct?  
 24 **A. That's correct.**  
 25 Q. I would ask that you flip to, in Exhibit 80, to

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1 index well 2C.  
 2 **A. Okay.**  
 3 Q. Now we look at index well 2C, and I'm going to  
 4 ask you some of the same questions. And first  
 5 of all, to remove any surprise or any doubt, the  
 6 monitoring well with respect to index well 2C,  
 7 it's smack dab in the middle of that index cell;  
 8 is that right?  
 9 **A. That's correct.**  
 10 Q. And so if there's a concern that it's in the  
 11 upper northern portion or anything of that  
 12 nature, that one's smack dab in the middle; is  
 13 that right?  
 14 **A. That's correct.**  
 15 Q. So let's look at the official well log for the  
 16 City of Wichita with respect to index well 2C  
 17 and that well log. I'm going to ask you to look  
 18 at that lithologic log and tell me, you know, at  
 19 the very beginning, and, frankly, the water  
 20 table is probably below some of this anyway, but  
 21 the very beginning we see clay, clay, clay, all  
 22 the way down to 74 feet. Would you agree with  
 23 that?  
 24 **A. To 75 -- oh, yeah, it's clay to 74. Well, clay**  
 25 **to 75.**

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1 Q. I'm sorry, clay to 75 feet, that's shown in the  
 2 next layer. And then after that, from 75 to  
 3 115 feet, we see sand and gravel, medium, fine;  
 4 is that right?  
 5 **A. That's correct.**  
 6 Q. And then from 115 feet all the way down to the  
 7 shale at 149 feet, once again, we hit a clay  
 8 layer; is that right?  
 9 **A. That's correct.**  
 10 Q. As you look at the official well log for the  
 11 City's monitoring well in index cell 2, what  
 12 would you tell me is the practical saturated  
 13 thickness?  
 14 **A. 40 feet.**  
 15 Q. And is that 40 feet calculated by looking at the  
 16 difference between 115 feet and 75 feet?  
 17 **A. Yes.**  
 18 Q. Now I'd ask that you turn to -- and this is just  
 19 purely for graphical purposes at this point to  
 20 help everybody visualize this, I ask that you  
 21 turn to the District's Exhibit 60 and turn to  
 22 the corresponding hydrograph on IW2C. If I were  
 23 to tell you that the red line, which shows the  
 24 existing minimum index level, the blue line,  
 25 which shows the minimum -- the level after the

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1 City's drought modeling, and the green line  
 2 shows the proposed minimum index level and I  
 3 were to tell you that comes from the City's  
 4 charts and data, would you have reason to  
 5 disagree with me?  
 6 **A. No, you're correct.**  
 7 Q. And, in fact, we see for the current minimum  
 8 index level, it shows 100 -- 1,410.52 feet, for  
 9 the blue line, which is the minimum -- the  
 10 drought modeling, we see 1,407.96 feet, and for  
 11 the proposed minimum index level, it would drop  
 12 it down to 1,390 feet; is that right?  
 13 **A. That's correct.**  
 14 Q. And based on, at least, this well log, which is  
 15 the only official well data we have in this  
 16 index cell related to the City, we find bedrock  
 17 down at 1,200 -- 299.4 feet; is that right?  
 18 **A. Well, that's the elevation. The bedrock is down**  
 19 **150 feet.**  
 20 Q. I'm -- I'm sorry, it's -- the bedrock starts at  
 21 149 feet, is that right, on that well log?  
 22 **A. Correct.**  
 23 Q. But we're showing elevations here, so if we drop  
 24 down from zero feet down 149 feet, that's how we  
 25 get to that 1,299.4 feet, which is the bedrock

1 elevation; is that right?  
2 **A. That's correct.**  
3 Q. Just a moment ago you told me that with respect  
4 to index well -- the monitoring well in index  
5 cell 2, the practical saturated thickness was  
6 40 feet; is that right?  
7 **A. Yes.**  
8 Q. Now I'd ask that you look at figure 10 once  
9 again. Figure 10 demonstrates from the City's  
10 modeling what would be the average remaining  
11 saturated thickness after the City has -- has  
12 pumped for eight years; is that right?  
13 **A. Yes.**  
14 Q. And what they've demonstrated or what they've  
15 shown from their modeling is there would be 187  
16 feet of saturated thickness in that index cell;  
17 is that right?  
18 **A. That's correct.**  
19 Q. But with respect to the monitoring well, which  
20 is smack dab in the middle of that index cell,  
21 we find that there's only a practical saturated  
22 thickness of 40 feet, correct?  
23 **A. Correct.**  
24 Q. Now I'd ask that you turn to figure 11. Figure  
25 11 purports to show what the saturated thickness

1 **the heart of the aquifer. Will we get to that?**  
2 Q. Let me zero in on my question here,  
3 Mr. Letourneau, and focus you in for a moment.  
4 What this data in figure 11 and figure 10 shows  
5 for index cell 2 is the average saturated  
6 thickness for that two-by-two-mile-square area,  
7 right?  
8 **A. Yes.**  
9 Q. So all we're talking about now is the saturated  
10 thickness in this 2-foot-by-2-foot area; is that  
11 right?  
12 **A. Two mile.**  
13 Q. Two-mile-by-two-mile area; is that right?  
14 **A. Correct.**  
15 Q. So we're not talking about anywhere else in this  
16 aquifer?  
17 **A. Okay.**  
18 Q. We're talking about that two-by-two-mile area,  
19 so at least as it relates to index cell 2, does  
20 the difference of over 100 feet in that one  
21 index cell, at least, give you some concern with  
22 the City's modeling?  
23 **A. No, because it's a model. I mean, I'd want to**  
24 **look at the heart of the well field. And then**  
25 **if there -- in the heart of the well field, if**

1 would be after we drop the minimum index level;  
2 is that right?  
3 **A. That's correct.**  
4 Q. And it shows on figure 11 that the saturated  
5 thickness, after dropping the minimum index  
6 level, under the City's modeling would be  
7 171 feet; is that right?  
8 **A. That's correct.**  
9 Q. Would you also agree that there's a big  
10 difference between 171 feet and 40 feet?  
11 **A. Yes.**  
12 Q. In fact, in both instances, on both figure 10  
13 and figure 11, we're talking a difference of  
14 well over 100 feet once again, correct?  
15 **A. Correct.**  
16 Q. Given the fact that the City's monitoring well  
17 is smack dab in the middle of index cell 2 and  
18 it shows a practical saturated thickness of only  
19 40 feet, does that give you cause for concern  
20 with the City's data?  
21 **A. No. I mean, no, because it's on the edge of**  
22 **the -- it's on the upper edge of the aquifer.**  
23 **Yeah, there is a big difference, but -- and it**  
24 **does raise a question, but we're at the edge of**  
25 **the aquifer. We might want to look at one in**

1 **we're that far off and at the edge we're that**  
2 **far off, then, yes, I would be concerned. But,**  
3 **yes, I mean, there is a big difference, but the**  
4 **modeling puts together water level -- water**  
5 **levels from a bunch of different well logs, not**  
6 **just one. But there -- I agree, there is a big**  
7 **difference.**  
8 Q. Let me focus in, Mr. Letourneau. If our  
9 discussion was only with respect to index cell  
10 2, and I'm only asking you about index cell 2  
11 and I don't -- I'm not asking about the rest of  
12 the aquifer at this juncture --  
13 **A. Oh, okay.**  
14 Q. -- if our discussion only had to do with index  
15 cell 2 and the decision with regard to index  
16 cell 2 and there was a difference of over  
17 100 feet from the practical saturated thickness  
18 to the reported saturated thickness, if we're  
19 only focusing in on that one area, would that  
20 give you cause for concern?  
21 **A. Yes. If -- if we only modeled that index cell**  
22 **and we had that -- this type of data from the**  
23 **well log and there was that much difference,**  
24 **then, yes, I would be concerned.**  
25 Q. So if we were only narrowing in on index cell 1



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1 and index cell 2 together, at least as it  
 2 relates now to that eight-square-mile area and  
 3 you saw that there was a vast difference between  
 4 the modeled results on one hand and the actual  
 5 well log data on the other hand, would you have  
 6 some concern?  
 7 **A. If it was only on those two cells, yes.**  
 8 Q. I would ask that you now turn to Exhibit 80 and  
 9 flip through to index well 10C.  
 10 **A. Okay, I'm there.**  
 11 Q. Now, just to give us a knowledge of where this  
 12 is, if we were to turn to figure 10 in the  
 13 City's proposal, would you agree that this  
 14 monitoring well of the City would be in what's  
 15 shown as IW10, which would be right within the  
 16 heart of that red area shown on that map?  
 17 **A. In the upper -- in the upper third of that red**  
 18 **area, yes.**  
 19 Q. Okay. So let's turn now to that well log. And  
 20 would you just also agree, again, I'm not trying  
 21 to trick you here --  
 22 **A. Sure.**  
 23 Q. -- but would you agree that this well log and  
 24 this well data that we're going to look at is in  
 25 the middle of index cell 10, it comes from the

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1 middle of index cell 10 roughly?  
 2 **A. Yes.**  
 3 Q. So if we turn to that well log shown as index  
 4 well 10C and this monitoring well that's the  
 5 City's official monitoring well, let's see what  
 6 the -- what their official drillers found in  
 7 that case. Let's start with -- let's look at  
 8 the lithologic log again, are you on that?  
 9 **A. I'm on it, yes.**  
 10 Q. And we're probably not real concerned with  
 11 what's found in the first 16 feet because the  
 12 water level is below the first 16 feet; is that  
 13 right?  
 14 **A. That's right.**  
 15 Q. And, in fact, would you agree that the -- yeah,  
 16 in fact, we can have testimony in this later in  
 17 the hearing as far as where the actual measured  
 18 water level is, but if I were to tell you that  
 19 it fluctuates, but it starts somewhere in the  
 20 range of 20 to 30 feet, would you have reason to  
 21 disagree with that measured data?  
 22 **A. No.**  
 23 Q. Okay. So either way, after we get past this  
 24 27 feet on this lithologic log, as a geologist,  
 25 you would start to look at the different layers

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1 in this well log, is that right, to determine  
 2 the saturated thickness; is that true?  
 3 **A. That's true.**  
 4 Q. And we can walk through the same exercise where  
 5 we look at sand and gravel and we look at where  
 6 clay starts and -- but if we were to add up  
 7 where the sand and gravel layers are, do you  
 8 have a number in mind as far as what that  
 9 practical saturated thickness would be?  
 10 **A. Really quickly, I get 70 to 75 feet probably.**  
 11 Q. If I were to tell you just for ease of your  
 12 reference that there's 49 feet of clay and  
 13 76 feet of sand and gravel, would that sound  
 14 about right to you?  
 15 **A. It sounded right.**  
 16 Q. Now, let's turn again to Exhibit 80. I --  
 17 **A. Or 60?**  
 18 Q. -- I misspoke, Exhibit 60. Let's turn again to  
 19 Exhibit 60, and if you flip 11 pages in to  
 20 Exhibit 60, you're going to come to the  
 21 hydrograph for well IW10C; is that right?  
 22 **A. Yes.**  
 23 Q. And if I tell you that the existing minimum  
 24 index level is at an elevation of 1,375.09 feet,  
 25 the minimum drought model elevation is at

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1 1,368.08 feet, and the proposed minimum index  
 2 level is at 1,358 feet and that's pulled from  
 3 the City's data, would you have reason to  
 4 disagree with those numbers?  
 5 **A. No.**  
 6 Q. In fact, do those numbers appear correct to you?  
 7 **A. Yes.**  
 8 Q. And then comparing to the actual well log of the  
 9 City, would you agree that if we drop down  
 10 189 feet, we come to that approximate bedrock  
 11 elevation of 1,243 feet? Does that sound right  
 12 to you?  
 13 **A. Yes.**  
 14 Q. Now let's turn to figure 10. In figure 10, you  
 15 indicated that -- it's indicated in figure 10  
 16 that after their simulation, their drought  
 17 simulation, there's going to be 175 feet of  
 18 saturated thickness in index cell 10, is that  
 19 what it purports to show?  
 20 **A. Yes, that's correct.**  
 21 Q. However, what you just told me from this well  
 22 log, which is smack dab in the middle of this  
 23 index cell, the actual practical saturated  
 24 thickness is only 76 feet; is that right?  
 25 **A. That's correct.**

1 Q. So I know we're 1 foot shy, but we're  
2 approximately -- that's approximately a 100-foot  
3 difference between the two; is that right?  
4 **A. That's correct.**  
5 Q. Now I'd ask that you flip to figure 11, which  
6 shows what the drop would be between -- if we  
7 lowered the minimum index level, right, is that  
8 what figure 11 shows?  
9 **A. Yes.**  
10 Q. And the difference between 76 feet and 165 feet  
11 shown in -- shown in that figure, would you  
12 agree, is 66 -- or, I'm sorry, let me back up  
13 just a moment. Let's go back to this  
14 hydrograph. If we go back to this hydrograph,  
15 would you agree that in this hydrograph that's  
16 shown with respect to index well 10C, the blue  
17 line is above the green line on that hydrograph,  
18 would you agree with that?  
19 **A. Yes.**  
20 Q. And so in other words, when we drop the proposed  
21 minimum index level further, the available  
22 saturated thickness is going to be less than the  
23 available saturated thickness when we're just  
24 considering the modeled results shown in that  
25 blue line; is that right?

1 approximately 100 feet, when you see that  
2 difference of 100 feet, at least if you were  
3 only looking at that index cell, would that give  
4 you cause for concern?  
5 **A. Yes.**  
6 Q. And, in fact, would you want the, at least your  
7 modelers, your team of modelers with the  
8 Division of Water Resources to go back and  
9 analyze that data in greater detail?  
10 **A. We will -- we will give it some consideration.**  
11 Q. And if you're to go back to your team of  
12 modelers, assuming this Chinese wall wasn't in  
13 place, would your recommendation, if you were  
14 giving an official recommendation to them, would  
15 your official recommendation be that it should  
16 be given some more consideration?  
17 **A. Yes.**  
18 Q. I didn't catch the answer?  
19 **A. Yes, I'm sorry.**  
20 Q. Now I'd ask that we turn to the last well log  
21 that is shown, which is in index well 21C. And,  
22 I'm sorry, I -- I minced words there, it's in  
23 index well 10, it's the monitoring well shown as  
24 index well 21C. My -- my learned colleague told  
25 me that I failed to clarify that it's in index

1 **A. Yes.**  
2 Q. Okay. And if we look at the difference between  
3 the two of those, you can see 1,358 subtracted  
4 from 1,368 is 10 feet; is that right?  
5 **A. Correct.**  
6 Q. So if our practical saturated thickness with  
7 respect to the modeled results was 76 feet,  
8 would you agree with me that the practical  
9 saturated thickness with respect to lowering the  
10 minimum index level would only be 66 feet? As  
11 shown on that well log data?  
12 **A. Yes.**  
13 Q. So then if we take that 66 feet and we compare  
14 it to figure 11 and we look at the 165 feet  
15 shown on figure 11, once again, we find  
16 basically a 100-foot difference between the two;  
17 is that right?  
18 **A. That's correct.**  
19 Q. So as we consider that 100-foot difference  
20 between the two, once again, I'm not asking you  
21 for the whole aquifer, consideration of the  
22 whole aquifer, I'm asking you to only narrow in  
23 on index cell 10, when you see a difference  
24 between what's reported as a saturated thickness  
25 and what the well log shows of over

1 cell 21. Does that sound --  
2 **A. Yes.**  
3 Q. -- correct where this monitoring well is?  
4 **A. Yes.**  
5 Q. I'd ask that you go to figure 10, tell me where  
6 on figure 10 index cell 21 is.  
7 **A. From north to south, it's in the middle, but**  
8 **from east to west, it's on the eastern edge.**  
9 Q. If we're trying to determine an index cell close  
10 to the middle of the area, the heart of the  
11 City's area, as you stated before, would you  
12 agree that this one's close to the middle of the  
13 heart of the area, as you perceive this?  
14 **A. Of the whole area on the map, yes; on the**  
15 **eastern edge of the central well field study**  
16 **area. But it is, yes, in this whole area, it's**  
17 **in the heart of it.**  
18 Q. Well, Mr. Letourneau, do you have an  
19 understanding of where the City's injection  
20 wells and recovery wells are?  
21 **A. Yes.**  
22 Q. Would you agree with me that there's a number of  
23 them situated right -- right in or around index  
24 cell 21?  
25 **A. Yes.**

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1 Q. So at least from that standpoint, would you  
2 agree that that index cell is in the heart or  
3 the middle of what we're talking about here  
4 today?  
5 **A. Yes.**  
6 Q. Now let's turn to the well log, the well log  
7 shown on -- for index cell 21, IW21C, which is  
8 the City's official well log. We see again that  
9 topsoil starts at zero feet, we go all the way  
10 down to shale at 164 feet, and I could ask you  
11 to engage in a consideration of how many feet of  
12 sand and gravel there are, but if I were to tell  
13 you that we've calculated that number, and you  
14 can look at it, you can see if my number looks  
15 roughly correct, if I were to tell you there's a  
16 practical saturated thickness of roughly  
17 46 feet, would you agree, have reason to  
18 disagree with that number?  
19 **A. Let's see, 95 minus 40 is -- seems like there's**  
20 **a hair bit more than that there.**  
21 Q. Let me --  
22 **A. I think there's more.**  
23 Q. Just for graphical purposes, let's back up.  
24 Let's flip to page 22 of Exhibit 60 with the  
25 hydrographs, let's back up for a moment.

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1 **A. Okay.**  
2 Q. As we look at the hydrographs, once again on  
3 this hydrograph, would you believe -- would you  
4 agree with me that the orange line corresponds  
5 with the approximate bedrock elevation where  
6 we're shown to hit bedrock on that well log  
7 shown in Exhibit 80?  
8 **A. Yes.**  
9 Q. And would you also agree with me that the number  
10 shown there, the red line, existing minimum  
11 index level is 1,363.04 feet, the minimum  
12 drought model elevation is 1,352.12 feet, and  
13 the proposed minimum index level would take it  
14 down to 1,342 feet, would you also agree that  
15 those are numbers taken from the City's  
16 modeling?  
17 **A. Yes.**  
18 Q. And so as we're trying to consider what is the  
19 available saturated thickness, what we're  
20 concerned with, and just so it's clear  
21 graphically and from a visual standpoint for  
22 everybody, all we're concerned about is the  
23 available saturated thickness below the blue  
24 line and below the green line; is that right?  
25 Because what we're considering here is the

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1 available saturated thickness after we either  
2 model -- do this eight-year drought shown in the  
3 blue line or after we drop to the new proposed  
4 minimum index level, that's the saturated  
5 thickness we're concerned with, correct?  
6 **A. Well, I think wherever it's screened -- the**  
7 **saturated thickness where it's screened.**  
8 Q. Let me ask you this: If we were to look at  
9 figure 10 for index cell 21, the 154 feet of  
10 saturated thickness identified by the City in  
11 their modeling, that's the saturated thickness  
12 demon -- that they have demonstrated for that  
13 entire index cell after eight years of drought;  
14 is that right?  
15 **A. That's correct.**  
16 Q. So if we go back to the hydrograph and we look  
17 at that blue line, which is their modeled  
18 eight-year drought, the number, that 161 feet,  
19 we're considering the area that would be below  
20 that blue line, right, the --  
21 **A. Oh.**  
22 Q. -- remaining saturated thickness, that's my  
23 question?  
24 **A. Yes.**  
25 Q. And so for purposes of determining an actual

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1 saturated thickness as it relates to this well  
2 log, we'd only be concerned of what the  
3 available -- or the practical saturated  
4 thickness would be below that blue line, if you  
5 will; is that correct?  
6 **A. I don't know why we'd only be concerned with**  
7 **that. I think we would be concerned with all of**  
8 **the saturated thickness.**  
9 Q. But if we're trying to compare apples to apples  
10 and we're trying to -- and we're analyzing in  
11 figure 10 the saturated thickness after we --  
12 after eight years of modeling and we're trying  
13 to compare it directly to the well log, wouldn't  
14 we be looking at a practical saturated thickness  
15 below the area that would be depicted by that  
16 blue line, which is the eight years of drought  
17 modeling?  
18 **A. Well, I pause there, David, because this -- this**  
19 **is an area that recharges, and so I think all of**  
20 **the saturated thickness is important, is my --**  
21 **is my reaction to that, not just what is below**  
22 **that particular line.**  
23 Q. Well, let me ask you --  
24 **A. I'm not -- I'm not trying to be difficult, I**  
25 **just --**

1 Q. If we were --  
2 **A. I just think all --**  
3 Q. I'll just ask it this way: If we're to apply --  
4 if I'm to ask you what is -- with respect to  
5 that well log for 21 -- for IW21C, if I ask you  
6 what is the practical saturated thickness  
7 below -- remaining after we model for an  
8 eight-year drought, and, again, to make it easy  
9 for you, the amount below that blue line, what  
10 is that practical saturated thickness?  
11 **A. Below the -- well, from 37 to 95 -- 37 feet to**  
12 **95 feet, it's some really good aquifer, it looks**  
13 **like. And then another 5 feet below that -- so**  
14 **it's about 60 feet is what I'm thinking. But --**  
15 **but the 60 feet starts at 37 feet.**  
16 Q. So you said about 50 feet of practical saturated  
17 thickness if we're looking at --  
18 **A. About 60. I think about 60. Okay. To be -- to**  
19 **be clear, from 37 to 95 is about 50 feet, okay,**  
20 **and then there's another --**  
21 Q. Let me -- let me pause you there,  
22 Mr. Letourneau.  
23 **A. Okay.**  
24 Q. At least where this blue line starts, that -- if  
25 we look at the difference of -- from zero feet

1 100 feet; is that right?  
2 **A. That's correct.**  
3 Q. The same question with respect to lowering the  
4 minimum index level, if we're to lower the  
5 minimum index level, would you have -- and we  
6 look at figure 11, based on the same exercise we  
7 did before, would you agree that the practical  
8 saturated thickness below the min -- the lowered  
9 minimum index level would be closer to 35 feet?  
10 **A. Correct.**  
11 Q. And so if we compare that 35 feet to what's  
12 shown on figure 11, which is 146 feet, there's a  
13 big difference, once again, between 146 feet and  
14 35 feet; is that right?  
15 **A. That's correct.**  
16 Q. So if we were to zero in only on index cell 21,  
17 a little 2-by-2-foot area, index cell 21 that's  
18 all we're focused on, we're not concerned with  
19 the rest of the aquifer, we're focused in on  
20 index cell 21, and you saw this difference of  
21 over 100 feet between the only monitoring well  
22 of the City and the modeled results of the City,  
23 would you have cause for concern?  
24 **A. Yes, yes, it raises a question, definitely.**  
25 Q. And, in fact, if we were only focused on index

1 to where that blue line is shown, that's a  
2 difference of 54 feet. Would you agree with me  
3 there?  
4 **A. I'd agree.**  
5 Q. So if we're considering the practical saturated  
6 thickness below that 54 feet, if you will, we're  
7 going to have to subtract out some of that area  
8 that you said was between that 37 and 95 feet,  
9 and the amount that you would have to subtract  
10 out would be the difference between 37 feet and  
11 54 feet; is that right?  
12 **A. Under your example, yes.**  
13 Q. And so my question is once we drop down to  
14 54 feet, which would be the City's modeled  
15 result, below that, would you agree with me that  
16 a reasonable number for the practical saturated  
17 thickness would be 46 feet at that point?  
18 **A. Yes.**  
19 Q. And would you also agree with me that there's a  
20 big difference between 46 feet of practical  
21 saturated thickness and the 154 feet of  
22 practical saturated thickness that's shown in  
23 the City's modeling for that entire index cell?  
24 **A. Yes.**  
25 Q. And once again, we have a difference of over

1 cell 21, would you have reason to go back to  
2 your modelers with the Division of Water  
3 Resources and ask that they look at this again?  
4 **A. Yes.**  
5 Q. And certainly we can continue with this exercise  
6 for a while, but for everyone's benefit I'll  
7 move on. But let me just ask you this now,  
8 we've looked at four index cells, we've looked  
9 at four index cells, two of them are right in  
10 the middle of the target area, if you will, and  
11 I will concede that two of them were also on the  
12 northern portion of the area that we've  
13 considered. But we've -- for our purposes  
14 today, we've looked at four out of the 38 index  
15 cells and we've looked at two of them shown  
16 within the central well field study area; is  
17 that right?  
18 **A. That's correct.**  
19 Q. And at least for the two within the central well  
20 field study area and the four in that -- in the  
21 entire area we've looked at, you had cause for  
22 concern with those four index cells; is that  
23 right?  
24 **A. It raises a question, yes.**  
25 Q. And if we're strictly looking at the fact that

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1 this has 38 index cells, we've looked at over  
 2 10 percent of the index cells already, haven't  
 3 we?  
 4 **A. Yes.**  
 5 Q. And have we looked at enough of them at this  
 6 point, having looked at four of them and we see  
 7 such vast difference between the practical  
 8 saturated thickness and the reported or modeled  
 9 saturated thickness, does it at least give you  
 10 some cause for concern?  
 11 **A. Yes, it raises a question.**  
 12 Q. And at least at this juncture, does it cause you  
 13 to want to go back to the Division of Water  
 14 Resources' modelers and ask if they look at this  
 15 all again?  
 16 **MR. OLEEN:** Object to the form of  
 17 the question, what do you mean by all?  
 18 **BY MR. STUCKY:**  
 19 Q. Does it cause you to want to go back to the  
 20 modeling team that you identified earlier that  
 21 exists within the Division of Water Resources  
 22 and ask that they look at this particular issue  
 23 again?  
 24 **A. Yes.**  
 25 **MR. OLEEN:** Object to form of the

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1 question, what do you mean by issue? Are  
 2 you limiting this to the four index cells  
 3 that you have specifically cherry-picked  
 4 and had the witness look at or the  
 5 entire -- all 38 index cells?  
 6 **BY MR. STUCKY:**  
 7 Q. I'm asking for all 38 index cells,  
 8 Mr. Letourneau. We've talked about four that  
 9 had drastic differences, are those four already,  
 10 in your mind, have they caused enough concern  
 11 that you would ask your modelers that work for  
 12 the Division of Water Resources to study again  
 13 whether or not these modeled saturated  
 14 thicknesses are accurate?  
 15 **A. I would go back and ask why the difference, yes.**  
 16 Q. For everybody's benefit, I'll move on to a  
 17 different line of questioning. Actually, I'll  
 18 just ask you a similar -- a similar question.  
 19 Earlier we talked about how we're talking --  
 20 that we're going to drop the minimum index  
 21 levels from anywhere from 9 -- from 9 feet to  
 22 23 feet; is that right?  
 23 **A. Correct.**  
 24 Q. I just bopped my colleague in the head, if you  
 25 noticed.

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1 **A. I didn't.**  
 2 Q. Earlier we talked about how we're going to drop  
 3 from anywhere from 9 to 23 feet. When we're  
 4 talking about a practical saturated thickness  
 5 that is varied from anywhere from 21 -- from  
 6 30 feet, as you said, for index cell 1 up to  
 7 76 feet for index cell 10, does a drop of 9 to  
 8 23 feet now give you more concern?  
 9 **A. It -- well, that would be based on -- that drop**  
 10 **would be based on the total in that particular**  
 11 **index cell. If we were to lower it, we would do**  
 12 **it on a prorated basis of the practical**  
 13 **saturated thickness that we determined.**  
 14 Q. But at least based on these well logs, would  
 15 it -- would it make you want to at least  
 16 reevaluate the impacts of lowering the aquifer  
 17 minimum index level from 9 to 23 feet depending  
 18 on what index cell we're in?  
 19 **A. Yes.**  
 20 Q. And, in fact, if we look at table 2-11, for  
 21 example, and we look at index cell 1 at least,  
 22 you told me that the practical saturated  
 23 thickness was 30 feet, at least for that well  
 24 log in index cell 1; is that right?  
 25 **A. Correct.**

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1 Q. Yet in index cell 1, they're proposing to lower  
 2 the minimum index level by over 23 feet; is that  
 3 true?  
 4 **A. That's true, but based on 131 feet of saturated**  
 5 **thickness.**  
 6 Q. Which is what -- and I acknowledge that's what  
 7 the City is modeling. But at least if we're  
 8 comparing the difference between what the actual  
 9 well log showed, which was you said a practical  
 10 saturated thickness of 30 feet, and dropping it  
 11 23 feet, if we at least compare that drop of  
 12 23 feet to the 30 feet per the actual well log,  
 13 would you agree that dropping that far could  
 14 cause a significant effect --  
 15 **A. Yes.**  
 16 Q. -- in that regard?  
 17 **A. Yes, based on those -- those amounts, yes.**  
 18 Q. And, in fact, we can continue with this exercise  
 19 for the index cells we've already talked about,  
 20 but at least with respect to the index cells  
 21 that we've talked about where the practical  
 22 saturated thickness was actually much, much less  
 23 than the modeled results, does dropping anywhere  
 24 from 9 to 23 feet give you some cause for  
 25 concern, at least, in those index cells?

1 **A. Yes.**

2 Q. And at least with respect to those index cells,  
3 would you like to revise your testimony that the  
4 drop in the minimum index level, at least with  
5 respect to those index cells, is not  
6 significant? In other words, let me ask you  
7 this: With respect to those four index cells,  
8 at least, would you agree that dropping the  
9 index level may be significant, at least with  
10 respect to those index cells and the effects  
11 that could have?

12 **A. It may be, it -- it's worth reviewing, yes.**

13 Q. And so before when you said dropping the index  
14 cells in the grand scheme of the saturated  
15 thickness of the aquifer doesn't seem that  
16 large, it doesn't seem that significant, at  
17 least for those four index cells, there is some  
18 significance; is that right?

19 **A. Yeah, there's additional data that we just  
20 brought forth, so yes.**

21 Q. So if you were only making a recommendation with  
22 respect to those four index cells, would the  
23 testimony that you provided in your deposition  
24 and also in your answers to our discovery  
25 requests, at least for those four index cells,

1 or not someone's going to complain about  
2 impairment if we drop below those 1993 levels,  
3 that's really not a good predictor, would you  
4 agree with me?

5 **A. I don't -- I don't know, I -- I don't know if I  
6 could say that's not a good predictor.**

7 Q. Well, in other words, if we drop below the 19 --  
8 if we drop the minimum index level below the  
9 1993 levels, it's very possible that individuals  
10 could complain about impairment; is that right?

11 **A. Yes, someone could.**

12 Q. With respect to the City's proposal, is the only  
13 way that impairment was addressed based on the  
14 conditions that would be imposed on the City?

15 **A. I don't -- can you help me with that?**

16 Q. Well, let me ask you this: Yesterday you heard  
17 Mr. Clement testify to one of the ways in which  
18 the City would deal with an impairment would be  
19 to help dig new wells if there are wells that  
20 were impaired; is that right?

21 **A. That's correct.**

22 Q. Do you believe, first of all, that it should be  
23 a permit condition for the City to be required  
24 to dig new wells in the event impairment occurs?

25 **A. Well, it depends on the type of impairment. If**

1 would your opinion change?

2 **A. It could, yes.**

3 Q. And if you were to engage in that same exercise  
4 as it related to all 38 index cells and you were  
5 to discover a vast difference between the  
6 practical saturated thickness shown in the  
7 actual well logs, the actual measured data,  
8 versus the modeled data, and you were to find a  
9 vast difference for all those index cells, would  
10 it give you more concern with the impacts of  
11 dropping the minimum index level?

12 **A. If there was the same type of effect, yes.**

13 Q. Earlier today, or maybe it was even yesterday, I  
14 guess I've been asking you questions for a  
15 while, you indicated that back in 1993 there  
16 were no complaints when that minimum index  
17 level -- when the water levels dropped to the  
18 current minimum index level; is that right?

19 **A. That's correct.**

20 Q. But just to clarify your answer in that regard,  
21 just because there were no complaints back in  
22 1993 doesn't mean there won't be complaints  
23 today; is that right?

24 **A. That's correct.**

25 Q. And so as far as a basis for determining whether

1 **it's quality, a new well won't work; but if it's  
2 quantity, it could be a new well or hooking up  
3 to the City's line.**

4 Q. When I asked Mr. Clement questions, he said,  
5 well, you know, we could dig, perhaps, an  
6 impaired domestic well another 23 feet down and,  
7 you know, we could solve the problem in that  
8 fashion. Do you recall that testimony?

9 **A. Yes. Yes, I do.**

10 Q. But what we've learned from looking at actual  
11 well log data and based on your years of  
12 experience as a geologist, would you agree that  
13 sometimes it's not as simple as just digging  
14 down another 23 feet?

15 **A. Yes, that's correct.**

16 Q. And, in fact, one could dig down another 23 feet  
17 and it's possible that you could be either in a  
18 clay layer or in an area that doesn't yield  
19 water; is that right?

20 **A. That -- that very well could be.**

21 Q. So the idea of simply just digging new wells,  
22 that may not always be a solution to address  
23 impairment; is that true?

24 **A. That's correct.**

25 Q. ASR Phase I and ASR Phase II both prohibit

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1 withdrawal of recharge credits if the water  
 2 level is below the minimum index level in the  
 3 index cells, correct?  
 4 **A. Correct.**  
 5 Q. And the chief engineer also concluded in his  
 6 August 8, 2005 ASR initial order that the public  
 7 interest was protected if the recharge credits  
 8 could not be withdrawn when the water level was  
 9 below the currently established minimum index  
 10 levels, right?  
 11 **MR. OLEEN:** Objection, I think it  
 12 assumes facts in evidence, you're probably  
 13 correct, but if you're going to be reciting  
 14 orders, I'd prefer that you look at the  
 15 language.  
 16 **MR. STUCKY:** I'm trying to speed up  
 17 this hearing process just a little bit.  
 18 **PRESIDING OFFICER:** I know. I know.  
 19 **MR. STUCKY:** I can pull up the  
 20 orders and have him flip to that part, if  
 21 that would -- I was trying to save a little  
 22 time here.  
 23 **MR. OLEEN:** Yeah, and I don't want  
 24 the witness to be agreeing with you that  
 25 orders say things when he hasn't seen what

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1 the orders say, unless he remembers.  
 2 **BY MR. STUCKY:**  
 3 Q. Mr. Letourneau, based on my question, do you  
 4 remember --  
 5 **A. I'd have to look at the order, David, yeah.**  
 6 Q. So off the top of your head, would you at least  
 7 agree that in ASR Phase I initial order and ASR  
 8 Phase II order, signed by the chief engineer,  
 9 that there was at least a condition established  
 10 that the City would not drop below the 1993  
 11 levels?  
 12 **MR. MCLEOD:** I'm going to ask  
 13 counsel to clarify, does he mean by  
 14 exercising the ASR rights, or is he  
 15 suggesting that the permits say that the  
 16 City can never allow a water level to drop  
 17 below the '93 level?  
 18 **PRESIDING OFFICER:** Where are the  
 19 permits in the record? I think -- I hate  
 20 to do that, but I think it'll solve the  
 21 objections if we're looking at the permit  
 22 language. Or the letter that you're  
 23 referring to.  
 24 **BY MR. STUCKY:**  
 25 Q. Let's start with Exhibit 26. I would ask -- I

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1 would ask that you turn to requirement number 13  
 2 on Exhibit 26, on page 12 of 21 of that  
 3 document. In 13, does it indicate that the City  
 4 will not drop below a certain index level?  
 5 **A. It does.**  
 6 Q. So to repeat my question before, and this is  
 7 during operation of ASR Phase I to get to  
 8 Mr. McLeod's --  
 9 **MR. MCLEOD:** I'm going to object to  
 10 the form of the question and ask that that  
 11 paragraph just be read into the record  
 12 verbatim instead of counsel's  
 13 characterization.  
 14 **BY MR. STUCKY:**  
 15 Q. Please do that, Mr. Letourneau.  
 16 **A. Number 13, that if the project is operated so  
 17 that recharge credits cannot be withdrawn if the  
 18 static water level in the index well is below  
 19 the lowest index water level for that index  
 20 well, the public interest in not diverting Equus  
 21 Beds groundwater will be protected.**  
 22 Q. Tell me what was meant by that lowest index  
 23 level as it -- as it is defined in that order.  
 24 **A. It's the bottom of the basin storage area, and  
 25 below that, then, is considered Equus Beds**

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1 **groundwater.**  
 2 Q. So is the minimum index level that's being  
 3 referred to there the 1993 level?  
 4 **A. Yes.**  
 5 Q. I would ask now that you flip to Exhibit 28 in  
 6 your notebook. I would ask that you look at  
 7 page 5 of that document, number 8, very last  
 8 sentence, and just to satisfy any objections,  
 9 please just read that last sentence into the  
 10 record.  
 11 **A. That recharge credits may be withdrawn from a  
 12 cell only when recharge credits are determined  
 13 to be available from the cell and the static  
 14 water level at its index well is above the  
 15 lowest index level; however, water may be  
 16 recharged when the static water level is below  
 17 the lowest index level in that well.**  
 18 Q. So in other words, if the water level is below  
 19 that lowest index level, the City can recharge,  
 20 but they can't withdraw water from below that  
 21 index level; is that right?  
 22 **A. That's correct.**  
 23 Q. And, again, in ASR Phase II, would you agree  
 24 with me that we're referring to the 1993 levels  
 25 as far as that index level; is that right?

1 **A. That's correct.**

2 Q. So it was already read into the record, at  
3 least, with respect to ASR Phase I, it was  
4 stated that it would be in the public interest  
5 not to allow the City to withdraw water below  
6 that minimum index cell?

7 **MR. MCLEOD:** I object to that  
8 question, I think that's a  
9 mischaracterization of what the order says.

10 **BY MR. STUCKY:**

11 Q. Let's read it again, it says, that if the  
12 project is operated so that recharge credits  
13 cannot be withdrawn if the static water level in  
14 index well is below the lowest index water level  
15 for that index well, comma, the public interest  
16 in not diverting Equus Beds groundwater will be  
17 protected. Is that what it states?

18 **A. Correct, below that level is Equus Beds  
19 groundwater.**

20 Q. So in other words, does it appear to be stating  
21 that by precluding the City --

22 **MR. MCLEOD:** I'm going to object  
23 again, I think that the condition speaks  
24 for itself, and trying to recharacterize it  
25 in other words and ask the witness to read

1 **that's trying to say.**

2 Q. I guess my question was did -- as it was  
3 contemplated, from your opinion, in that order,  
4 was the 1993 level picked as a bottom because at  
5 least at that time it was viewed as being in the  
6 public interest to pick that bottom at that  
7 time?

8 **A. That was the bottom. I think if the bottom  
9 would have been a 1980 level, that's what it  
10 would have been. So that was the bottom, that  
11 was the starting point, that was the bottom at  
12 the time.**

13 Q. And at least that phraseology in that order  
14 suggests that not dipping below that bottom,  
15 would you interpret it as stating that that  
16 would be in the public interest?

17 **A. At that time, yes.**

18 Q. And just to refresh since you're the expert  
19 witness for the Division of Water Resources,  
20 again, the Division of Water Resources hasn't  
21 done any specific analysis or modeling on water  
22 quality or minimum desirable streamflow, right?

23 **MR. OLEEN:** Objection, asked and  
24 answered.

25 **PRESIDING OFFICER:** Fair.

1 it is suggesting that if the condition is  
2 not as stated there, the public interest  
3 would not be protected, that's just not  
4 what the condition says. He's trying to  
5 imply a contrapositive that's not stated.

6 **PRESIDING OFFICER:** I think it's  
7 reasonable to inquire as to  
8 Mr. Letourneau's understanding of the  
9 condition.

10 **BY MR. STUCKY:**

11 Q. Mr. Letourneau, based on your understanding of  
12 that condition, at least when it was signed off  
13 on by the chief engineer with respect to ASR  
14 Phase I, do you believe it was the intent of  
15 that order to suggest that precluding the City  
16 to withdraw water with regard to its ASR  
17 facility below the 1993 levels would help to  
18 protect the public interest?

19 **A. Well, it -- that 1993 level is what set the  
20 index, minimum index level, and we didn't want  
21 some -- Wichita to take a recharge credit from  
22 below the in -- from the basin storage area.  
23 And so it's in the public interest that Wichita  
24 just pump their recharge credits from their  
25 space in the aquifer. I think that's what**

1 **MR. STUCKY:** I'll move on.

2 **BY MR. STUCKY:**

3 Q. With respect to this hearing, we've talked a lot  
4 about the -- how an AMC, an aquifer maintenance  
5 credit, would be accumulated and the fact that  
6 it leaves water in the aquifer. However, we've  
7 had very little discussion about the impacts  
8 that would occur when one actually withdraws  
9 that water from the aquifer. Would you agree  
10 that there's been less discussion of that  
11 aspect?

12 **A. Yes.**

13 Q. Let's turn to Exhibit 13 in the notebook before  
14 you. In that answer, at least -- in Exhibit 13,  
15 in the answer to interrogatory number 16, you  
16 indicate in your answer, at least, that after an  
17 AMC is accumulated, it states, and I'm going to  
18 quote, that any subsequent request by Wichita to  
19 cash in and withdraw any AMCs that might be  
20 accumulated would have to be applied for and  
21 approved by DWR, end quote. What is meant by  
22 applied for and approved by DWR with respect to  
23 cashing in an AMC credit?

24 **A. Well, an AMC credit is diverted under the  
25 authority of a permit, and so anything over and**



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1 above -- they have the ability to divert 19,000  
 2 recharge credits right now, and anything over  
 3 and above 19,000 would take another application  
 4 and a permit, an approved permit.  
 5 Q. So I guess my question for you is this: At the  
 6 point at which one is cashing in and withdrawing  
 7 these credits, is it your position that it  
 8 should be looked at again by the chief engineer  
 9 and the Division of Water Resources?  
 10 A. **Not -- not over 19,000. If it's less than**  
 11 **19,000, they already have authority for that.**  
 12 MR. OLEEN: If I may, point of  
 13 clarification, Mr. Stucky?  
 14 MR. STUCKY: Sure.  
 15 MR. OLEEN: Are we looking at DWR's  
 16 response to GMD2's second set of  
 17 interrogatories number 16, the original  
 18 response or number 16, the amended  
 19 response?  
 20 MR. STUCKY: Number 16, the original  
 21 response.  
 22 MR. OLEEN: Why --  
 23 MR. STUCKY: The amended response  
 24 would be found in Exhibit 15.  
 25 MR. OLEEN: Why are we looking at

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1 the original set instead of the amended?  
 2 **BY MR. STUCKY:**  
 3 Q. Okay. Let's go to Exhibit 15. It states in the  
 4 second-to-last sentence of that answer, it  
 5 states, if Wichita then wished to withdraw more  
 6 recharge credits, AMCs or physical, than the  
 7 current recharge-credit withdrawal limitation of  
 8 19 (sic) acre-feet, comma, then any such  
 9 additional withdrawals first would have to be  
 10 applied for and approved by DWR. So what we  
 11 have there is that same language, would have to  
 12 be applied for and approved by DWR, but the  
 13 difference is it's after that first 19,000  
 14 acre-feet is withdrawn, is that the answer now?  
 15 A. **Correct.**  
 16 Q. Okay.  
 17 A. **It was my answer before also, but my verbal.**  
 18 MR. OLEEN: Thank you.  
 19 **BY MR. STUCKY:**  
 20 Q. So is it your belief that this hearing, then, is  
 21 to also determine how not only the AMC credits  
 22 could be accumulated but also to determine the  
 23 circumstances under which they could be  
 24 withdrawn?  
 25 A. **Well, I mean, if you're talking about the**

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1 **priority of withdrawal, that's something that**  
 2 **we'll discuss, yeah, that we're going to further**  
 3 **discuss. Is that what you mean?**  
 4 Q. I guess my question is so if we're talking about  
 5 the priority of the withdrawal and we're talking  
 6 about some of those specifics about how we would  
 7 withdraw an AMC credit in the future, you're  
 8 saying that some of that requires some further  
 9 discussion and determination?  
 10 A. **Yeah, right now, the City can withdraw their**  
 11 **recharge credits however they see fit, and we**  
 12 **don't have an approval of an AMC yet.**  
 13 Q. And so then let's say just hypothetically we do  
 14 have an approval of an AMC and a credit itself,  
 15 the accumulation of the credit itself, are you  
 16 saying that how to withdraw that credit should  
 17 be subject to a later hearing?  
 18 A. **No. I don't want another hearing ever. But,**  
 19 **no, I mean, it would -- in their proposal, we**  
 20 **did talk about pumping the 40,000 acre-feet**  
 21 **first and then the recharge credit second, so**  
 22 **that's on the table for discussion. And an AMC**  
 23 **would be a recharge credit. So if the City**  
 24 **agreed to pumping the 40,000 first and then the**  
 25 **AMC -- the recharge credit second, that's**

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1 **something that we could lay out in a permit**  
 2 **condition.**  
 3 Q. Let me ask you this: At least with respect to  
 4 lowering the minimum index level and based on  
 5 some of that well log data we looked at, is it  
 6 now your belief that it may not be in the public  
 7 interest to lower that minimum index level?  
 8 A. **I can't say that until we review it more.**  
 9 Q. So in other words, whereas before when Mr. Oleen  
 10 was asking you questions, you thought that  
 11 lowering the minimum index level was in the  
 12 public interest, are you saying now that you  
 13 want to review this proposal further before you  
 14 make that determination?  
 15 A. **We will give that consideration, yes,**  
 16 **definitely.**  
 17 Q. Let's turn away from the concept of lowering  
 18 minimum index levels and let's move back to the  
 19 idea of attaching conditions to the withdrawal  
 20 of AMC credits. We talked about several  
 21 conditions already, so I'm not going to talk  
 22 about any of those conditions, but let's talk  
 23 about a few others. And, in fact, in  
 24 Exhibit 77, you already read a number of the  
 25 conditions that you've identified into the

1 record, so I'm not going to look back at those  
2 again. Is a potential condition if the City  
3 were to accumulate an aquifer maintenance credit  
4 and they're able -- while they accumulate that  
5 aquifer maintenance credit they're able to  
6 divert that water to the City and they're able  
7 to use it for municipal use, would you agree  
8 with me so far?

9 **A. So far.**

10 Q. But then later they're able to withdraw another  
11 gallon of water from the aquifer and use it in  
12 the form of a credit; is that right?

13 **A. Correct.**

14 Q. So my question is after they use that credit  
15 under the AMC proposal, do you believe that a  
16 viable condition would be that the City have to  
17 replace that gallon of water in the future?

18 **A. No, because they previously did not pump it.**

19 Q. Well, just a moment ago, you told me that to  
20 withdraw an AMC credit you would have to -- you  
21 would have to pump a gallon of water from the  
22 aquifer to cash in that credit, if you will?

23 **A. Correct. That's correct.**

24 Q. So in other words, if they've already used a  
25 gallon of water in the City and now they've

1 **authority of Health and Environment on the**  
2 **authority of Division of Water Resources. I**  
3 **don't know how those two would blend because**  
4 **they already are subject to Health and**  
5 **Environment, whether it's a permit condition of**  
6 **ours or not.**

7 Q. In your deposition on page 63, which is  
8 Exhibit 20, Mr. Lee Rolfs asked you in a  
9 question shown on line 8, so is DWR thinking  
10 about imposing conditions on any approval that  
11 they have to get appropriate KDHE, Kansas  
12 Department of Health and Environment, approval  
13 before they can forward -- they go forward --  
14 before they can go forward? Your answer was,  
15 that's a good thought, I mean, putting that  
16 condition in.

17 **A. You'll have to -- what page again?**

18 Q. Page 63.

19 **A. Oh, I'm sorry.**

20 Q. Starting on line 8, the question was asked if it  
21 would be good to put KDHE approval as one of the  
22 conditions?

23 **A. Yeah, it's a thought, I mean, but then after**  
24 **further thought, they already have -- KDHE**  
25 **already has authority without making it a DWR**

1 withdrawn a gallon of water from the aquifer, so  
2 we have 2 gallons now withdrawn used, one in the  
3 City, one withdrawn from the aquifer, would it  
4 be sensible, then, that the City would have to  
5 replace that gallon of water that was actually  
6 withdrawn from the aquifer when the AMC credit  
7 was cashed in?

8 **A. They're two different items, David, that's**  
9 **two -- two different things.**

10 Q. We'll come back to that.

11 **A. Okay.**

12 Q. With respect to another permit condition, during  
13 your deposition, I believe that your testimony  
14 was that this proposal of the City should be  
15 subject to KDHE approval. Is that something you  
16 stated in your deposition?

17 **A. I think it already is, yes.**

18 Q. So you're agreeing that should be a permit  
19 condition?

20 **A. You know, I don't know if it's appropriate to**  
21 **make that a water right permit condition because**  
22 **the City is already subject to Health and**  
23 **Environment standards, through -- through the**  
24 **authority of Health and Environment, so I don't**  
25 **understand why you would want to tie the**

1 **permit condition.**

2 Q. In fact, in the Phase II order, is there a  
3 permit condition that there has to be KDHE  
4 approval?

5 **A. You'll have to show it to me, I'm not --**

6 Q. Let's go back to Exhibit 28.

7 **A. I'm there.**

8 Q. And if we go to number 12, very last line, last  
9 clause, it says, that the plan should also be  
10 consistent with any requirements which KDHE may  
11 impose for any UIC permits KDHE may issue  
12 pertaining to the ASR wells. And in other  
13 words, number 12 is part of the permit  
14 conditions; is that right?

15 **A. That's correct.**

16 Q. So now going back to your deposition answer,  
17 when asked if that should be a potential permit  
18 condition, you indicated that's a good thought  
19 and you suggest that that could potentially be  
20 put in. As you're sitting here today, could  
21 that be a potential permit condition?

22 **A. It -- yeah, it could be a potential permit**  
23 **condition. I don't think it's necessary, but I**  
24 **think it could be.**

25 Q. In DWR Exhibit 1, there's a draft order in DWR

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1 Exhibit 1. I would ask that you turn, it's the  
 2 second page of the proposed draft order, there's  
 3 that red line where it shows 660 feet. Have you  
 4 found that portion?  
 5 **A. Yes. Yes, I'm there.**  
 6 Q. And what we're referring to is to protect  
 7 existing domestic well owners located within  
 8 660 feet of an existing or new ASR well, it says  
 9 the City has agreed to test -- agreed that the  
 10 water quality should be preserved; is that  
 11 right?  
 12 **A. That's correct.**  
 13 Q. And also within that 660 feet, it's stated that  
 14 the City will protect against impairment; is  
 15 that right?  
 16 **A. Correct.**  
 17 Q. And that's actually shown in the next line which  
 18 is number 13; is that right?  
 19 **A. Well, there's -- there's quality impairment and**  
 20 **quantity impairment, yes.**  
 21 Q. So there's a difference -- so there's a  
 22 difference there. Now, when Mr. Pajor was on  
 23 the stand, and I can have you look again at  
 24 Exhibit 27, which was the MOU that -- well, I'll  
 25 have you -- let's go to Exhibit 27 just for your

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1 benefit. And you would agree that Exhibit 27 is  
 2 the memorandum of understanding for ASR Phase  
 3 II?  
 4 **A. Yes. Yep, that's it.**  
 5 Q. With respect to the commitment shown under issue  
 6 number 5, would you agree with me, like  
 7 Mr. Pajor agreed with me, that at least with  
 8 respect to water quality we don't find that  
 9 660-foot requirement?  
 10 **A. I -- I agree.**  
 11 Q. And, in fact, at least in ASR Phase II, the  
 12 permit condition protects the water quality for  
 13 all well owners regardless of whether they're  
 14 within 660 feet; is that right?  
 15 **A. That's correct.**  
 16 Q. So I guess my question is in this proposed  
 17 order, why would we want to make it more  
 18 restrictive? Shouldn't we protect the water  
 19 quality for all well owners regardless of  
 20 whether they're within 660 feet and make it  
 21 consistent with ASR Phase II?  
 22 **A. Well, we could. I actually thought we just**  
 23 **carried over the standards from the MOU into the**  
 24 **draft order. And I just have to point out that**  
 25 **that is a draft order, and what you're talking**

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1 **about is something that we could consider.**  
 2 Q. So making it consistent with the ASR Phase II  
 3 memorandum of understanding, you -- your  
 4 recommendation would be make -- your  
 5 recommendation is to make it consistent with  
 6 that MOU; is that right?  
 7 **A. That's right.**  
 8 **MR. OLEEN:** Objection, misstates the  
 9 witness's testimony.  
 10 **MR. STUCKY:** That's what he just  
 11 said.  
 12 **MR. OLEEN:** I made my objection.  
 13 **PRESIDING OFFICER:** That's what I  
 14 heard him say.  
 15 **BY MR. STUCKY:**  
 16 Q. We heard the City state that they could improve  
 17 their infrastructure, in other words, they could  
 18 at some point change their infrastructure so  
 19 they can divert water into the aquifer and pull  
 20 water out of the aquifer at the same time. Do  
 21 you recall that?  
 22 **A. Yes.**  
 23 Q. Do you believe it should be a permit condition  
 24 for the City to improve their infrastructure at  
 25 some point in the future?

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1 **A. Well, can you ask that last part again, I'm**  
 2 **sorry?**  
 3 Q. I guess my question is when we're talking about  
 4 permit conditions for the City, do you think any  
 5 permit conditions should be focused on asking  
 6 the City to improve some of their existing  
 7 infrastructure?  
 8 **A. I don't think that ought to be a permit**  
 9 **condition.**  
 10 Q. Do you believe, and I think you already answered  
 11 this -- strike that, I'll move on.  
 12 We've talked a little bit about the  
 13 accounting methodology for -- under the City's  
 14 proposal; is that right?  
 15 **A. That's correct.**  
 16 Q. With respect to the accounting methodology, you  
 17 have stated that it's your viewpoint that there  
 18 should be no regulatory change that's required  
 19 to be made; is that right?  
 20 **A. You mean as far as to define an AMC or something**  
 21 **like that?**  
 22 Q. Yeah, to in other words effectuate the  
 23 accounting methodology for the AMC proposal,  
 24 your previous testimony was that you don't  
 25 believe there needs to be a regulatory change,

1 is that what you stated?  
2 **A. That was our legal counsel that believed that.**  
3 Q. Let's turn to Exhibit 22 and if you could turn  
4 with me to K.A.R. 5-12-2. It's on page 129,  
5 just to help you out.  
6 **A. I'm there.**  
7 Q. Would you agree with me that K.A.R. 5-12-2 deals  
8 with aquifer storage and recovery accounting?  
9 **A. Yes.**  
10 Q. Would you agree with me that this is the -- if  
11 you were analyzing the accounting methodology  
12 and how it's applied, this is the regulation you  
13 would look at within the Equus Beds district?  
14 **MR. OLEEN:** I object, I don't think  
15 the witness can draw legal conclusions, nor  
16 do I think he does ASR accounting, I don't  
17 think he's testified that he does ASR  
18 accounting.  
19 **A. I don't do the accounting.**  
20 **BY MR. STUCKY:**  
21 Q. Well, let me ask you this: Have you ever looked  
22 at this regulation before?  
23 **A. Yes.**  
24 Q. And I actually misspoke, it's a statewide  
25 regulation, have you looked at this regulation

1 **A. Okay.**  
2 Q. -- and the blue line has to do with the physical  
3 recharge accounting --  
4 **A. Okay.**  
5 Q. -- does that sound accurate?  
6 **A. Yes.**  
7 Q. And at least for 2015, Mr. McCormick testified  
8 that there was a variance of almost 1,000 feet  
9 between those two types of accounting  
10 methodologies; is that right?  
11 **A. That's correct.**  
12 Q. At least with respect to wetter years and for  
13 the years -- such as the year 2015, would you  
14 agree that there's variance, significant  
15 variance in the accounting methods?  
16 **A. Those lines are --**  
17 **MR. OLEEN:** I'm going to object  
18 again, I don't think this -- I think this  
19 witness said he doesn't do ASR accounting.  
20 And he can look at a graph, I guess, and  
21 confirm whether or not there's distance  
22 between two points, but I don't think he  
23 can go into any more detail than that.  
24 **PRESIDING OFFICER:** Can you rephrase  
25 what you're getting at --

1 before?  
2 **A. Yes.**  
3 Q. In your job, have you had the occasion to apply  
4 this regulation to anything that you've worked  
5 on?  
6 **A. No.**  
7 **MR. STUCKY:** I'll withdraw the line  
8 of questioning.  
9 **BY MR. STUCKY:**  
10 Q. Let's turn to figure 16 in the City's proposal  
11 found on page 4-6. Let me know when you're  
12 there.  
13 **A. I'm there.**  
14 Q. Mr. Letourneau, at least for the year 2015,  
15 Mr. McCormick -- well, let me back up and state  
16 that the two lines shown on figure 16 show a  
17 difference between the actual physical recharge  
18 under the existing accounting and the AMC  
19 accounting. Would you agree that that's what  
20 those two lines show?  
21 **A. Yeah, but you'll have to help me because my**  
22 **legend is cut off at the bottom, what is the**  
23 **green line and what is the blue line?**  
24 Q. If I were to tell you the green line has to do  
25 with the AMC accounting approach --

1 **MR. STUCKY:** Yes.  
2 **PRESIDING OFFICER:** -- without going  
3 into specifics?  
4 **BY MR. STUCKY:**  
5 Q. When we're looking at a difference of 1,000  
6 acre-feet between the ASR accounting with  
7 physical credits versus the AMC credits, when  
8 we're looking at a difference of 1,000  
9 acre-feet, in your mind, is that a significant  
10 difference?  
11 **A. In one year, yes. But these -- these lines are**  
12 **pretty close up until that one year.**  
13 Q. So, again, you're the witness for the Division  
14 of Water Resources and the expert that's been  
15 designated for this hearing, at least for the  
16 purpose of analyzing wetter years under the  
17 City's accounting methodology, would it be your  
18 recommendation that perhaps the City should do  
19 some more analysis of how they go about their  
20 accounting, at least in the wetter years?  
21 **A. Well, this has to do with no availability in the**  
22 **basin storage area. If it was -- if there was**  
23 **availability in the basin storage area for a**  
24 **physical recharge credit, then a very wet year,**  
25 **they could put in all of the physical recharge**

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1 credits that were available. So the -- the  
 2 reason that this line is higher, in my opinion,  
 3 is because it is a wet year and there's no space  
 4 for the aquifer, they were able to accumulate  
 5 ASR -- AMC credit in a wet year.  
 6 Q. So you're saying, and we can come back and  
 7 address this point, you're saying in 2015 there  
 8 was no room for physical recharge of the  
 9 aquifer?  
 10 A. Other than in the basin storage -- I mean, in  
 11 the recharge basin.  
 12 Q. What was not -- I guess I'm unclear. What was  
 13 unavailable for recharge in the year 2015?  
 14 A. I don't believe there was any space available in  
 15 the basin storage area because the water table  
 16 was so high, in the index levels. The index  
 17 level was too high for a physical recharge  
 18 credit other than in the recharge basin. So I  
 19 believe that ...  
 20 Q. I'm going to ask you one more time to clarify.  
 21 I've asked colleagues to my left and to my right  
 22 if they understand what you're saying, and they  
 23 both tell me they don't. Can you just explain  
 24 to me what -- one more time what was available  
 25 for recharge in 2015 and what space was not

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1 available for recharge?  
 2 A. Well, you understand the basin storage area, if  
 3 it's too high, there's no room for recharge  
 4 credits.  
 5 Q. Understood.  
 6 A. Okay. In 2015, I believe that the water table  
 7 was too high, so there wasn't space available to  
 8 do a physical recharge credit other than the  
 9 recharge basin that does not have that -- that  
 10 upper level restriction.  
 11 Q. Is part of the reason there's variance between  
 12 the actual physical recharge accounting method  
 13 and the AMC accounting method in wetter years  
 14 because there's more leakage from the aquifer in  
 15 wetter years?  
 16 A. Maybe, yes, that could be. And -- and depending  
 17 where the recharge credits are. If -- it's my  
 18 understanding if you put in the recharge credits  
 19 in the basin -- in the recharge basin, then  
 20 there's about 50 percent of that leaks out of  
 21 the account.  
 22 Q. And we'll come back to whether there was  
 23 recharge in 2015, but assuming we're able to  
 24 demonstrate that there was, in fact, recharge in  
 25 the year 2015 and we see this large variance

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1 between the AMC accounting and the actual  
 2 physical recharge accounting, at least in wetter  
 3 years like 2015, do you believe that there's  
 4 enough variance between the two accounting  
 5 methodologies that at least for wetter years it  
 6 requires further discussion with the City?  
 7 A. Your question -- we can consider it, it's worth  
 8 asking about, definitely.  
 9 Q. Now I'd like to get a little more into the heart  
 10 of the matter before us here today. Before we  
 11 do that, I would like to walk through just a few  
 12 of the regulations that you would be applying as  
 13 you analyze an aquifer maintenance credit.  
 14 Let's start there.  
 15 MR. OLEEN: I'm sorry, I don't mean  
 16 to interrupt Mr. Stucky, I don't know  
 17 exactly what our time limitations are, I  
 18 wonder if this is a good time to stop  
 19 before going down a certain new route of  
 20 questioning?  
 21 PRESIDING OFFICER: We have five  
 22 minutes, the church wants us to leave at  
 23 3:00 o'clock.  
 24 MR. STUCKY: I was just asking  
 25 questions, I can --

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1 PRESIDING OFFICER: You've got until  
 2 3:00 o'clock so --  
 3 MR. STUCKY: I can be done for the  
 4 day, I mean, that's fine, it's --  
 5 PRESIDING OFFICER: Just whatever  
 6 makes sense. If -- I leave that up to you.  
 7 MR. STUCKY: May I approach the  
 8 witness?  
 9 PRESIDING OFFICER: Yes.  
 10 BY MR. STUCKY:  
 11 Q. Once again, I'm going to hand the witness my  
 12 learned colleague's phone. This -- what's shown  
 13 on the phone, on Mr. Boese's phone is the  
 14 recharge that actually occurred in 2015.  
 15 MR. MCLEOD: Is counsel asking a  
 16 question --  
 17 MR. STUCKY: I am.  
 18 MR. MCLEOD: -- or is he testifying?  
 19 BY MR. STUCKY:  
 20 Q. If I were to tell you that the recharge that  
 21 occurred in 2015 was north of 1800 acre-feet,  
 22 would you have reason to disagree with that  
 23 number?  
 24 A. No, I wouldn't.  
 25 Q. So to correct our record, would you agree, at

1 least, that in 2015 there was physical recharge  
 2 of the aquifer by the City?  
 3 **A. Yeah, is that per well or index cell?**  
 4 Q. Well, let's actually -- you know, we have it  
 5 right in front of us, let's go to table 4-2  
 6 that's already before you. And clean up this  
 7 point with the City's data.  
 8 **A. Oh, okay.**  
 9 Q. Let's look at 2015 and it shows acre-feet of  
 10 actual physical recharge total in 2015, what is  
 11 that number?  
 12 **A. It's almost 1800 acre-feet.**  
 13 Q. It's 1,890.4 acre-feet; is that right?  
 14 **A. Oh, yes. I was in the wrong column.**  
 15 Q. So in other words, we had a total recharge of  
 16 almost 1900 --  
 17 **A. That's right.**  
 18 Q. -- acre-feet in 2015; is that right?  
 19 **A. That's correct.**  
 20 **MR. STUCKY:** Having clarified and  
 21 cleaned up that question, I note that it's  
 22 one minute till 3:00 o'clock, and I'm about  
 23 to delve into another significant line of  
 24 questioning, should we call it a day?  
 25 **PRESIDING OFFICER:** I think so.

1 Thank you, everyone. We will resume on  
 2 March 2nd, and I will send out another  
 3 notice with those details. But thank you,  
 4 everyone, that closes the hearing for today  
 5 but does not end the hearing or close the  
 6 record.  
 7 (Whereupon, the proceedings were  
 8 adjourned at 5:00 p.m.)  
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1 C E R T I F I C A T E  
 2 STATE OF KANSAS )  
 3 SEDGWICK COUNTY ) ss:  
 4 I, Nancy L. Rambo, a Certified Shorthand  
 5 Reporter, within and for the State of Kansas, do  
 6 hereby certify that the foregoing is a true and  
 7 correct transcript of the proceedings had at the  
 8 time and place hereinbefore set forth.  
 9 I further certify that I am not a relative  
 10 or employee or attorney or counsel of any of the  
 11 parties, nor am I a relative or employee of such  
 12 attorney or counsel, nor am I financially  
 13 interested in the action.  
 14 WITNESS my hand and official seal at  
 15 Wichita, Sedgwick County, Kansas, this 22nd day of  
 16 February, 2020.  
 17  
 18  
 19 NANCY L. RAMBO, R.P.R., C.S.R.  
 20 Registered Professional Reporter  
 21 Certified Shorthand Reporter  
 22  
 23  
 24  
 25 Costs:

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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage v*

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*Formal Hearing*  
*Vol. VII*  
*March 2, 2020*

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STATE OF KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the City )  
of Wichita's Phase II ) Case No.  
Aquifer Storage and ) 18 WATER 14014  
Recovery Project in Harvey )  
and Sedgwick Counties, )  
Kansas, )  
Pursuant to K.S.A. 82a-1901  
and K.A.R. 5-14-3a

FORMAL HEARING  
VOLUME VII

This matter came on for Formal Hearing  
before Constance C. Owen, Presiding Officer, at  
the First Mennonite Church, 427 West Fourth,  
Halstead, Harvey County, Kansas, commencing at  
8:32 a.m., on the 2nd day of March, 2020.

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A P P E A R A N C E S

City of Wichita, Department of Public  
Works and Utilities, appears by their attorney,  
Brian K. McLeod, Deputy City Attorney, 435 North  
Main, 13th Floor, Wichita, Kansas 67202.

Equus Beds Groundwater Management District  
No. 2 appears by their attorneys, Thomas A. Adrian  
and David J. Stucky, Adrian & Pankratz, 301 North  
Main, Suite 400, Newton, Kansas 67114. Also  
present was Tim Boese.

Division of Water Resources appears by  
their attorneys, Aaron B. Oleen and Stephanie  
Murray, Kansas Department of Agriculture, 1320  
Research Park Drive, Manhattan Kansas 66502.

Intervenors appear by their attorney,  
Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
Kansas 67056.

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**PRESIDING OFFICER:** Okay. We are  
now on the record. It is 8:30 in the  
morning on March 2nd, 2020. This is the  
continuation of an administrative hearing  
and the title of which is In the Matter of  
the City of Wichita's Phase II Aquifer  
Storage and Recovery Project in Harvey and  
Sedgwick Counties, Kansas, Case  
Number 18 WATER 14014.  
My name is Constance C. Owen, and I'm  
serving as presiding officer. And we are  
continuing to conduct business at the First  
Mennonite Church of Halstead.  
And I believe that we were in  
cross-examination with Lane Letourneau. So  
we'll proceed with that. Mr. --  
**MR. OLEEN:** Ms. Owen --  
**PRESIDING OFFICER:** Pardon me.  
**MR. OLEEN:** -- if I may, I neglected  
to introduce my colleague for the record  
over these past proceedings, and if I could  
announce their appearances for your  
benefit, if I may.  
**PRESIDING OFFICER:** Please do.  
**MR. OLEEN:** This is my colleague

1 Stephanie Murray, she's also a staff  
2 attorney with the KDA, Division of Water  
3 Resources. She's been here throughout  
4 these proceedings. I actually don't recall  
5 whether she has submitted an official  
6 written entry of appearance, but she will  
7 do so promptly, if that hasn't already been  
8 done.  
9 **PRESIDING OFFICER:** I've considered  
10 Stephanie a part of the team all along, so  
11 thank you very much.  
12 Any other preliminaries before we start?  
13 Okay, great. Mr. Stucky.  
14  
15 CROSS-EXAMINATION (Cont.)  
16 **BY MR. STUCKY:**  
17 Q. Good morning --  
18 **A. Good morning.**  
19 Q. -- Mr. Letourneau.  
20 **A. Good morning.**  
21 Q. Last time when we were here, I think we were  
22 discussing the concept of the accounting, and we  
23 were beginning our discussion with respect to  
24 the accounting. And I believe that we had  
25 mentioned a letter from the chief engineer where

1 **A. Yeah, the accounting method of counting a**  
2 **recharge credit wouldn't change. An aquifer**  
3 **maintenance credit is a recharge credit. So the**  
4 **AMC is a different name for a recharge credit,**  
5 **but there's still accounting for a recharge**  
6 **credit. I think that's what we meant by that**  
7 **answer.**  
8 Q. So just to clarify, in the City's proposal, as  
9 distinguished from an ASR II credit, does the  
10 accounting method for the AMC credits change,  
11 are we -- is the City proposing a new type of  
12 accounting?  
13 **A. I don't think we're -- I don't think the City is**  
14 **proposing a new type of accounting, but they are**  
15 **proposing a new type of recharge credit.**  
16 Q. Okay. I'd ask that you now turn to Exhibit 26,  
17 it's going to be in Volume II of the notebook in  
18 front of you.  
19 **A. 26?**  
20 Q. Yeah, Exhibit 26, please. If you're on  
21 Exhibit 26, I'd ask that you turn to page 11 on  
22 Exhibit 26. And specifically, once again, just  
23 so we're clear for the record, would you agree  
24 that Exhibit 26 is the August 8th, 2005 ASR  
25 Phase I initial order?

1 he had indicated that a different -- that the  
2 AMC credits could be utilized, that there would  
3 be a different form of accounting essentially  
4 that would be used. Do you recall a discussion  
5 about that last time?  
6 **A. Yes.**  
7 Q. So just so I -- just so I'm clear, is it your  
8 view that aquifer maintenance credits are  
9 simply, quote, just a different form of  
10 accounting, end quote?  
11 **A. Yes.**  
12 Q. I'd ask that you now turn to Exhibit 11 in the  
13 white notebook of Volume I. I'd ask that you  
14 turn to page 7 of Exhibit 11, it's question  
15 number 10.  
16 **A. Okay.**  
17 Q. In question number 10, it says, please explain  
18 in detail the accounting method that will be  
19 used to determine water entering and leaving the  
20 aquifer with the AMC proposal. The answer was,  
21 it is DWR's understanding that under the AMC  
22 proposal, the accounting method would not  
23 change, end quote. Do you know what is meant by  
24 the phrase, the accounting method would not  
25 change, as it's used in that answer?

1 **A. Yes.**  
2 Q. And number -- number 3 on page 11, could you  
3 read that for the record?  
4 **A. That passive recharge credits should not be**  
5 **allowed because they are not, quote,**  
6 **artificial - just a second - because they are**  
7 **not, quote, artificial recharge as defined in**  
8 **K.A.R. 5-1-1 because no source water is being**  
9 **artificially recharged to create those credits.**  
10 Q. So at least as it related to the ASR Phase I  
11 order, the idea was that source water had to be  
12 physically injected into the aquifers, was that  
13 the concept of ASR Phase I?  
14 **A. Yes.**  
15 Q. And, in fact, as the statement implies, if the  
16 source water wasn't injected into the aquifer,  
17 that was going to be considered a passive  
18 recharge credit; is that true?  
19 **A. That's correct.**  
20 Q. And also as used in number 3, would you agree  
21 that the term recharged and -- that's used in  
22 the context of water being put into the aquifer  
23 for storage, would you agree that's the context  
24 it's used?  
25 **A. Yes, in number 3 it is, correct.**

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1 Q. So at least as of the Phase I order as implied  
 2 in number 3, passive recharge credits were not  
 3 allowed; is that true?  
 4 **MR. OLEEN:** Objection, I think he's  
 5 calling for a legal conclusion.  
 6 **PRESIDING OFFICER:** Well, I think  
 7 that's what the exhibit just said but let's  
 8 see where you're going with this,  
 9 Mr. Stucky.  
 10 **MR. STUCKY:** I think he's familiar  
 11 with this order and he can answer the  
 12 question.  
 13 **BY MR. STUCKY:**  
 14 Q. Based on your familiarity with this order and  
 15 your understanding of the history of ASR Phase I  
 16 and ASR Phase II, and also as it's stated in  
 17 number 3, would you agree with me that at least  
 18 as of the ASR Phase I order, passive recharge  
 19 credits were not allowed?  
 20 **A. That's correct. And we -- and, sorry, David,**  
 21 **but we agree that passive recharge credits**  
 22 **should still not be allowed so ...**  
 23 Q. Now, is it also true that the term passive  
 24 recharge credits is not defined in statute or  
 25 regulation?

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1 **A. That's -- not that I'm aware of.**  
 2 Q. And so part of the definition for passive  
 3 recharge credits is actually obtained from the  
 4 ASR Phase I and Phase II orders. Is that a true  
 5 statement?  
 6 **A. That's correct.**  
 7 Q. I would ask that you now turn to Exhibit 28,  
 8 also in the same notebook. Actually, strike  
 9 that, let's move back to Exhibit 26. If you  
 10 could go to finding number 10 in Exhibit 26 in  
 11 that ASR Phase I initial order.  
 12 **A. Okay.**  
 13 Q. Okay. Let's go to 10b of -- on, it says page 2  
 14 of 11 at the top of that page. At the bottom is  
 15 10b, though, could you read 10b for the record?  
 16 **A. I don't -- you might have to help me, I don't**  
 17 **know what --**  
 18 **MR. STUCKY:** May I approach the  
 19 witness?  
 20 **PRESIDING OFFICER:** Yes.  
 21 **A. Yeah. I've got the -- I'm in 26. Oh, okay.**  
 22 **Okay. 10b?**  
 23 **BY MR. STUCKY:**  
 24 Q. Yes, could you read 10b for the record?  
 25 **A. Will the City be considered to be recharging**

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1 **water into the Equus Beds by the concept of**  
 2 **passive recharge, water which the City could**  
 3 **have legally pumped but did not?**  
 4 Q. So in other words, at least as it's used in this  
 5 phrase, the concept of passive recharge credits  
 6 is defined as, quote, water which the City could  
 7 have legally pumped but did not pump, end quote.  
 8 Is that a true statement?  
 9 **A. That's true.**  
 10 Q. So in other words, the idea that the City could  
 11 have diverted water out of the aquifer but chose  
 12 not to, that was considered a passive recharge  
 13 credit, at least at the time of this ASR Phase I  
 14 order. Is that a true statement?  
 15 **A. That's true.**  
 16 Q. Now I'd ask that you turn to finding number 42  
 17 and that's on page 9 out of 21. Could you read  
 18 finding number 42? At the very top, it says  
 19 9 -- page 9 out of 21, if you're on that page.  
 20 **A. I'm there. Item number 42, the final amended**  
 21 **MOU between the City and GMD did not contain an**  
 22 **agreement or recommendation concerning the**  
 23 **City's request for passive recharge credits,**  
 24 **credits for not pumping City wells in the basin**  
 25 **storage area, and deferred the matter to the**

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1 **chief engineer.**  
 2 Q. So -- and I'm going to focus on the middle of  
 3 that particular sentence, what it states is  
 4 passive recharge credits, paren, and then it  
 5 says, credits for pumping City wells in the  
 6 basin storage area, and then we see another  
 7 paren. So in other words, again, passive  
 8 recharge credits, at least as it's shown with  
 9 the parentheses here, was -- passive recharge  
 10 credits were defined as credits for not pumping  
 11 the City wells in the basin storage area. Is  
 12 that how it was defined there?  
 13 **A. That's how 42 reads.**  
 14 Q. Now I'd ask that you turn to ASR Phase II order,  
 15 which is found in Exhibit 28. If you could turn  
 16 with me to page 5. If you could read for me  
 17 what's stated as numerical -- number 2 in the  
 18 order for the -- could you read that for the  
 19 record?  
 20 **A. That passive recharge credits shall not be**  
 21 **allowed.**  
 22 Q. So in other words, when the ASR Phase II order  
 23 was adopted by the chief engineer, at that time  
 24 as well, the idea of passive recharge credits  
 25 also were not allowed; is that right?

1 **A. That's correct.**  
 2 Q. Do you have any reason to believe that the  
 3 definition of passive recharge credits would  
 4 have changed between ASR Phase I order and ASR  
 5 Phase II order?  
 6 **A. No.**  
 7 Q. So in other words, once again, in ASR Phase II  
 8 order, passive recharge credits would have been  
 9 defined as essentially water left in the aquifer  
 10 that the City could have pumped but chose not  
 11 to. Is that a true statement?  
 12 **A. Yes, I mean, that -- that's true.**  
 13 Q. So -- and I think you already indicated that at  
 14 least at this point -- well, and in general, I  
 15 think you told me that it's the Division of  
 16 Water Resources' position that passive recharge  
 17 credits should not be allowed. Is that a true  
 18 statement?  
 19 **A. That's correct.**  
 20 Q. As far as the definition of passive recharge  
 21 credits goes, is it still DWR's official  
 22 position that passive recharge credits should be  
 23 defined as they are defined in ASR Phase I  
 24 order?  
 25 **MR. OLEEN:** Objection, I think

1 misstates the witness's testimony.  
 2 **MR. STUCKY:** I'm asking a question.  
 3 **MR. OLEEN:** Well, but you said isn't  
 4 it true that it's DWR's opinion that the  
 5 definition of passive recharge credits is  
 6 as it is in the -- in these orders, and  
 7 where is DWR's official position? Perhaps  
 8 if you could rephrase, I would withdraw my  
 9 objection, perhaps I misheard.  
 10 **PRESIDING OFFICER:** I think I  
 11 understand what you're asking but try  
 12 again.  
 13 **BY MR. STUCKY:**  
 14 Q. Okay. Let's -- let's back up again. In the ASR  
 15 Phase I order, we have a definition of passive  
 16 recharge credits; is that true?  
 17 **A. Well, it doesn't say passive recharge credits**  
 18 **are defined as.**  
 19 Q. But at least there's an implication of what  
 20 passive recharge credits mean in ASR Phase I  
 21 order; is that true?  
 22 **A. Yes.**  
 23 Q. And my question is at this point does the  
 24 Division of Water Resources still agree with the  
 25 definition or the implied definition of passive

1 recharge credits in ASR Phase I order?  
 2 **A. Yes.**  
 3 Q. Now, I'd ask that you turn to, in your black  
 4 notebook before you, it's the City's black  
 5 notebook, to the proposal document. As you're  
 6 looking, getting to the proposal document, based  
 7 on the prior discussion we had, just on a  
 8 surface level, would you agree with me that the  
 9 City is proposing to receive aquifer maintenance  
 10 credits by offsetting pumping of the City's  
 11 existing groundwater rights in the Equus Beds  
 12 Aquifer with surface water diverted from the  
 13 Little Arkansas River, treated, and sent to the  
 14 City for municipal use? In a nutshell, would  
 15 you agree that's the City's proposal?  
 16 **A. Yes.**  
 17 Q. Now I'd ask that you turn to page 1-2 of the  
 18 City's proposal. Let me know when you're on  
 19 that page.  
 20 **A. I'm -- I'm there.**  
 21 Q. On the very bottom of that page, two sentences  
 22 up from the bottom of that page, there's a  
 23 sentence that begins, the water left in storage.  
 24 Can you read that sentence for the record?  
 25 **A. The water left in storage as a result of**

1 **utilizing Little Arkansas River flows rather**  
 2 **than groundwater from the Equus Beds well field**  
 3 **would be considered as an ASR aquifer**  
 4 **maintenance credit, AMC, with similar**  
 5 **characteristics to the current ASR recharge**  
 6 **credits.**  
 7 Q. So in other words, at least as is suggested in  
 8 this sentence, the concept of an aquifer  
 9 maintenance credit is accumulated or created  
 10 based on the water left in storage. Is that a  
 11 true statement?  
 12 **A. Well, it's -- it's water left in storage, but**  
 13 **it's water taken from the Little Ark River. I**  
 14 **mean, Little Ark River water has to be available**  
 15 **to -- available and treated before it becomes an**  
 16 **AMC.**  
 17 Q. Correct. So for each gallon of water that is  
 18 taken from the Little Arkansas River and treated  
 19 and sent to the City, essentially there would be  
 20 credit given for another gallon essentially for  
 21 an aquifer maintenance credit because water is  
 22 being left in storage. Is that what this  
 23 sentence is implying?  
 24 **A. Correct, if -- if there's no space in the**  
 25 **aquifer to accumulate a physical recharge**

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1 **credit, then the City, under this proposal,**  
 2 **would get an aquifer maintenance credit.**  
 3 Q. I now ask that you turn to page 3-1 of the  
 4 City's proposal document.  
 5 **PRESIDING OFFICER:** I'm sorry,  
 6 where'd you turn?  
 7 **MR. STUCKY:** Page 3-1.  
 8 **PRESIDING OFFICER:** Thank you.  
 9 **BY MR. STUCKY:**  
 10 Q. On page 3-1, there's also a sentence that's two  
 11 sentences from the bottom, could you read that  
 12 aloud for the record?  
 13 **A. The water left in storage because of utilizing**  
 14 **Little Arkansas River flows rather than**  
 15 **groundwater from the Equus Beds well field would**  
 16 **be considered an ASR aquifer maintenance credit,**  
 17 **AMC, with similar characteristics to the current**  
 18 **ASR recharge credits.**  
 19 Q. So same implication here, correct?  
 20 **A. Correct.**  
 21 Q. In other words, if water is diverted from the  
 22 Little Arkansas River and the City chooses to  
 23 leave water in the aquifer, they're going to get  
 24 a credit. Is that essentially what this is  
 25 saying?

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1 **A. That's correct.**  
 2 Q. So with respect to this concept of passive  
 3 recharge credits, based on the fact that the  
 4 City is seeking credit for not pumping out of  
 5 the aquifer; is that true?  
 6 **A. Yes, I mean, they want to keep the water levels**  
 7 **up so they're not pumping from the aquifer.**  
 8 Q. So based on the fact that they're seeking this  
 9 credit for not pumping water out of the aquifer,  
 10 wouldn't that be similar to the passive recharge  
 11 credit that's prohibited in ASR Phase I and  
 12 Phase II orders?  
 13 **A. We -- we saw a definite difference in the**  
 14 **passive recharge credit that was in the old**  
 15 **orders and the new aquifer maintenance credit**  
 16 **under this proposal, we saw a difference in that**  
 17 **because of the Little Arkansas diversion, the**  
 18 **infrastructure and things, so that's where we**  
 19 **saw the difference. There is similarity,**  
 20 **though, where the water is not pumped from the**  
 21 **aquifer, we can -- we fully agree with that.**  
 22 Q. Well, let me ask it this way: The City is  
 23 seeking credit for not pumping water from the  
 24 aquifer and leaving that water in storage under  
 25 the AMC proposal; is that true?

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1 **A. That's true, we call that management, management**  
 2 **of the groundwater.**  
 3 Q. But just to be clear, if the City wanted to  
 4 choose that water, they have a legal right to  
 5 pump that water; is that true?  
 6 **A. Absolutely.**  
 7 Q. So backing up, then, to the ASR Phase I  
 8 definition of a passive recharge credit, we  
 9 agreed that definition was water which the City  
 10 could have legally pumped but did not pump, end  
 11 quote. So based on that definition, can you  
 12 explain again for the record how an aquifer  
 13 maintenance credit is different from that  
 14 definition of what's prohibited in a passive  
 15 recharge credit?  
 16 **A. Well, at the time of that order, the passive**  
 17 **recharge credits were talking about using water**  
 18 **from Cheney. It was -- Phase II wasn't even**  
 19 **there, they -- it was -- the talk was using**  
 20 **water from Cheney and not pumping the aquifer,**  
 21 **and so that's what we considered a passive**  
 22 **recharge credit at that time.**  
 23 Q. Now, Mr. Letourneau, I understand that there  
 24 might have been discussions about Cheney  
 25 Reservoir at the time of the ASR Phase I and

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1 Phase II order, but would you at least agree  
 2 with me if you were to flip through the ASR  
 3 Phase I and Phase II order, we won't find any  
 4 mention of Cheney Reservoir as far as in the  
 5 context of a passive recharge credit? Is that a  
 6 true statement?  
 7 **A. That's true.**  
 8 Q. Now, let me back up. At least initially, when  
 9 the City first came to you with a concept of an  
 10 aquifer maintenance credit, there was concern  
 11 among DWR staff that these -- that these aquifer  
 12 maintenance credits were passive recharge  
 13 credits; is that true?  
 14 **A. Sure. I mean, we looked at it, I mean,**  
 15 **definitely, to -- we -- yeah, I mean, in the**  
 16 **very beginning -- in the very beginning of the**  
 17 **discussion, we fully questioned it.**  
 18 Q. And, in fact, in your deposition, you stated the  
 19 same thing, that at least initially there was  
 20 quite a bit of concern that passive -- that  
 21 aquifer maintenance credits were, in fact, just  
 22 passive recharge credits, is that what you  
 23 stated in your deposition?  
 24 **A. Could be, yeah.**  
 25 Q. And I think you also said in your deposition

1 that at least initially it was the Division of  
2 Water Resources' position that these aquifer  
3 maintenance credits should not be allowed  
4 because they were being considered passive  
5 recharge credits. Is that also a true  
6 statement?

7 **A. Yes.**

8 Q. But then later, I think you also indicate in  
9 your deposition that more consideration was  
10 given to the concept, and at some point the  
11 Division of Water Resources changed their  
12 opinion, official opinion with regard to whether  
13 or not aquifer maintenance credits were passive  
14 recharge credits. Is that also true?

15 **A. Yeah, we did change our opinion, I mean, when --**  
16 **when we saw the validity of the infrastructure,**  
17 **managing the aquifer full, that we felt it**  
18 **appropriate to move forward with the concept of**  
19 **aquifer maintenance credits.**

20 Q. In your deposition, you mentioned that there  
21 were several individuals with the Division of  
22 Water Resources that were concerned that aquifer  
23 maintenance credits were just nothing more than  
24 passive recharge credits. Is that also  
25 something you state in your deposition?

1 **A. I'd like -- I'd have to trust you that my -- I**  
2 **don't have my deposition in front of me, but I**  
3 **trust you, David, that that's what I said.**

4 Q. Well, I'll ask you, then, for the record,  
5 initially, did the Division of -- were there  
6 several individuals among the Division of Water  
7 Resources that had concern that aquifer  
8 maintenance credits were, in fact, passive  
9 recharge credits?

10 **A. I don't know if we -- if the concern was AMCs**  
11 **were passive recharge credits, but there was**  
12 **concern about accumulating these credits this**  
13 **way without us -- without us fully reviewing it,**  
14 **reviewing the proposal. But, yeah, when it**  
15 **first came to us, yeah, there was several of us**  
16 **that said we need to take a long, hard look at**  
17 **this.**

18 Q. So tell me, then, what conversations occurred or  
19 what tipped the balance, if you will, in favor  
20 of believing that these were not, in fact,  
21 passive recharge credits?

22 **A. Well, I -- I don't remember the specific**  
23 **conversation, but I know about how the Division**  
24 **felt about it. And, again, I've got to go back**  
25 **to the water is available, high flows in the**

1 **Little Ark, it's diverted from -- it's diverted**  
2 **with the A -- the ASR diversion works, the**  
3 **surface water is treated just as if it would**  
4 **become a physical recharge credit, there's no**  
5 **space in the aquifer for the recharge credit**  
6 **because if it was it would be put into the**  
7 **aquifer; but because space is not there, it's**  
8 **taken to town and they get a credit for it.**  
9 **That -- that was the tipping point for us was**  
10 **the infrastructure.**

11 Q. So in other words, and I'm going to make sure I  
12 understand what you mean by infrastructure, the  
13 idea that the water could be treated, is that  
14 what you mean by infrastructure?

15 **A. Could be treated and injected into the --**  
16 **everything is the same as far as ASR, everything**  
17 **from the start is -- high flows from the river,**  
18 **treated as if it's going to be injected into the**  
19 **aquifer, but then it's -- there's no space there**  
20 **for it, so we didn't -- we felt it appropriate**  
21 **not to make the City pump the space just to**  
22 **replace it.**

23 Q. So just so I'm clear what you're saying here,  
24 though, if we take overflow water from the  
25 Little Arkansas River and it's treated, it

1 would, under the AMC proposal, it would be sent  
2 directly to the City for municipal use; is that  
3 right?

4 **A. From -- from the T at the ASR facility. I mean,**  
5 **it goes -- it goes to a spot to see if there's**  
6 **space in the aquifer; if there is no space, then**  
7 **it's sent directly to the City, that's correct.**

8 Q. So at least with respect to that water, that  
9 source water that's sent directly to the City,  
10 that source water isn't physically injected into  
11 the aquifer, correct?

12 **A. That's correct.**

13 Q. And that source water isn't stored in the  
14 aquifer; is that correct?

15 **A. That's correct.**

16 **MR. OLEEN:** Objection, he's calling  
17 for a legal conclusion because that  
18 phraseology comes from the statute.  
19 Actually the regulation.

20 **PRESIDING OFFICER:** I'm confused.

21 **MR. OLEEN:** Okay.

22 **MR. STUCKY:** I'll -- I can get to  
23 those regulations in a minute.

24 **PRESIDING OFFICER:** Okay.

25 **MR. OLEEN:** Yeah, he -- the phrase



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1 "is stored" is in a particular regulation;  
 2 the cite I don't have right with me right  
 3 now, I can get it. But I object to him  
 4 asking this witness what that word means, I  
 5 think it's something that lawyers should  
 6 argue about. I'll get the regulation if  
 7 you prefer.  
 8 **PRESIDING OFFICER:** Can you try  
 9 again?  
 10 **MR. STUCKY:** Yes.  
 11 **BY MR. STUCKY:**  
 12 Q. The water that's taken from the Little Arkansas  
 13 River and used in the -- at the City source for  
 14 municipal use, that water isn't actually placed  
 15 in the aquifer; is that true?  
 16 **A. It's not placed in the basin storage area.**  
 17 Q. And whether I use the term stored or contained  
 18 in the aquifer, whichever terminology will  
 19 suffice at this point in the hearing, you would  
 20 agree that that water is neither contained nor  
 21 stored in the aquifer; is that true?  
 22 **A. That's -- that's correct.**  
 23 Q. Back when we were here a few weeks ago, there  
 24 was a discussion with Mr. McCormick about water  
 25 that could be left in Cheney Reservoir and how

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1 that was viewed, at least by the City, as how  
 2 the concept of a passive recharge credit was  
 3 embedded. Do you recall that discussion?  
 4 **A. Yes.**  
 5 Q. So with respect to Cheney Reservoir, and I'll  
 6 let you now speak to your understanding of ASR  
 7 Phase I and the discussions with regard to  
 8 Cheney Reservoir, tell me what your  
 9 understanding was as it related to Cheney  
 10 Reservoir when it -- with ASR Phase I.  
 11 **A. And for the record, I was not in -- I was not**  
 12 **part of those discussions, but I do understand**  
 13 **what -- about DW -- the Division of Water**  
 14 **Resources. So it's my understanding secondhand**  
 15 **that the City wanted credit for the operation of**  
 16 **Cheney Reservoir, saying that we're going to**  
 17 **divert Cheney water in lieu of Equus Beds**  
 18 **groundwater and we want credit for that. And**  
 19 **that's what the Division of Water Resources did**  
 20 **not feel appropriate.**  
 21 Q. I want to back up just for a moment. You said  
 22 that with respect to the ASR Phase I discussions  
 23 with regard to Cheney Reservoir, you weren't  
 24 part of those discussions; is that true?  
 25 **A. No.**

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1 Q. Well --  
 2 **A. Oh, no, you're right, that is true, I was not**  
 3 **part of those discussions.**  
 4 Q. Because just a moment ago, I think, and my  
 5 memory may not be serving me correctly, but I  
 6 think you said that when ASR Phase I order was  
 7 being put into place, it was your belief that  
 8 Cheney Reservoir was being discussed and that  
 9 was the context of that ASR Phase I order, but I  
 10 believe it's your testimony now that you weren't  
 11 part of those discussions, correct?  
 12 **A. That's correct. I mean, I worked for the**  
 13 **Division and I knew about them but I was not in**  
 14 **those meetings.**  
 15 Q. So at least as your understanding goes for this  
 16 concept of passive recharge credits, the City at  
 17 some point wanted credit for not -- not pumping  
 18 out of the aquifer because it was pumping out of  
 19 Cheney Reservoir instead; is that right?  
 20 **A. That's correct.**  
 21 Q. And the Division of Water Resources says that  
 22 should not be allowed, right?  
 23 **A. That's correct.**  
 24 Q. I asked Mr. McCormick if we were, in fact, to  
 25 instead pump water out of El Dorado Reservoir,

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1 if the City started to pump water out of  
 2 El Dorado Reservoir and in turn was not pumping  
 3 out of the aquifer, would that be viewed as a  
 4 passive recharge credit, if they are asking for  
 5 a credit for pumping out of El Dorado Reservoir?  
 6 **A. Yes, that would be pass -- we would consider**  
 7 **that -- we, DWR, would consider that a passive**  
 8 **recharge credit.**  
 9 Q. Now, Mr. Letourneau, you're familiar with the  
 10 statutes and regulations that allow a city or a  
 11 municipality to pipe water from one reservoir to  
 12 another location, you're familiar with those  
 13 statutes and regulations?  
 14 **A. Yes.**  
 15 Q. And without delving into those in great detail,  
 16 would you at least agree with me there are  
 17 statutes and regulations that allow a  
 18 municipality, for example, to divert water from  
 19 El Dorado Reservoir to another city?  
 20 **A. Yes.**  
 21 Q. So at least from a conceptual standpoint, would  
 22 it be possible for the City to divert water from  
 23 El Dorado Reservoir and treat it at their ASR  
 24 Phase -- Phase I treatment facility?  
 25 **A. Yes, it could.**

1 Q. And so just walk through this with me for a  
2 moment, let's say that the City is taking water  
3 when -- from El Dorado Reservoir when it's above  
4 a certain flood pool, similar to what they're  
5 doing at Cheney Reservoir, they're taking that  
6 water to their ASR Phase I treatment facility  
7 near Bentley and they're treating it, you follow  
8 me so far?

9 **A. So far.**

10 Q. And then at that point, after it's treated,  
11 they're sending it back to the City for  
12 municipal use. Do you understand my scenario?

13 **A. Yes.**

14 Q. Now, under that scenario, if the City were then  
15 to say, we should get credit for not having  
16 taken water out of the aquifer, do you believe  
17 that the City should get credit for not taking  
18 water out of the aquifer in that context?

19 **A. No, I mean, that's not part of this proposal,  
20 plus the AMC is still just a functioning  
21 equivalent of diversions at the Little Ark,  
22 that's -- that's the proposal in front of us.**

23 **That -- Cheney, El Dorado, anything else, we  
24 would consider that a passive recharge credit.**

25 Q. Well, let me ask you this: Let's say the City

1 this proposal and whether this proposal is  
2 a good idea or not.

3 **PRESIDING OFFICER: Okay.**

4 **MR. STUCKY: Can I speak to that?**

5 **PRESIDING OFFICER: Of course.**

6 **MR. STUCKY: I think that this is a  
7 fair line of questioning to try and  
8 determine under what circumstances we have  
9 a passive recharge credit and under what  
10 circumstances we don't have a passive  
11 recharge credit, and I think this line of  
12 scenarios makes sense. And I'm almost back  
13 to the main point, but I think it helps to  
14 define for the record under what  
15 circumstances we have a passive recharge  
16 credit and under what circumstances we  
17 don't, I think they're fair questions.**

18 **PRESIDING OFFICER: Well, that's  
19 where I thought you were going with this,  
20 was trying to set up comparisons. So  
21 within that context, I'll let you finish  
22 that up.**

23 **A. I'm willing to sum it up, I mean, under -- we  
24 can throw out a bunch of what-ifs and what if  
25 Bentley, what if Big Ark, what if the only**

1 were to build a recharge facility along the Big  
2 Arkansas River and they were to take water from  
3 the Big Arkansas River, treat it at their  
4 Bentley treatment facility, and then send it to  
5 the City for municipal use, do you think the  
6 City under that scenario should get credit for  
7 not having pumped out of the aquifer?

8 **A. I mean, that's not part of this proposal, I -- I  
9 mean -- I mean, right now, no, because that's  
10 not part of this proposal.**

11 Q. Well, let's say that in the future it is a  
12 proposal made by the City, I'm asking from your  
13 understanding and opinion of passive recharge  
14 credits would that be allowed?

15 **MR. MCLEOD: Relevance.**

16 **MR. OLEEN: I join in that. I  
17 understand where opposing counsel is going,  
18 he's trying to make implications about kind  
19 of a house of cards argument, but we're  
20 here to talk about this proposal. If in  
21 the future there's some other proposal akin  
22 to what Mr. Stucky is hypothesizing, then  
23 that proposal will be considered. So I  
24 don't see the value in going down this line  
25 of hypotheticals; we're here to talk about**

1 **proposal we have in -- everything other than  
2 diversions from the Little Ark through the ASR  
3 diversion works would be considered passive  
4 recharge credits right now. Anything else.  
5 Right now, the only AMCs are from the Little Ark  
6 diversion and the ASR project, that's it.**

7 Q. Okay. I think you answered my question. So if  
8 someone from the City then came to you and said,  
9 we want to take floodwater from the Big Arkansas  
10 River, treat it at our Bentley treatment  
11 facility, send it to the City for municipal use,  
12 and at the same time get a recharge credit, you  
13 would say, you can't do that because it's a  
14 passive recharge credit, correct?

15 **A. As of right now, yes.**

16 Q. So in your view, then, the distinction here with  
17 respect to the Little Arkansas River, is the  
18 distinction the nature of where the water is  
19 coming from then?

20 **A. Well, it's the start of the ASR, I mean, yeah,  
21 it's coming from the Little Ark, ASR diversion,  
22 treated at the ASR facility, there's just not  
23 space in the aquifer. That's what it boils down  
24 to.**

25 Q. So as you're sitting here today, then, is it

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1 still your position that the City's proposal as  
 2 it's before us today is not a passive recharge  
 3 credit?  
 4 **A. It's not a passive recharge credit.**  
 5 Q. Now I'd like to turn to the concept of change  
 6 applications. When -- when you were asked in  
 7 your deposition by Mr. Rolfs under what  
 8 circumstances a water right can be changed  
 9 without a change application, you gave a list of  
 10 examples; is that correct?  
 11 **A. Yeah, I'd have to see my deposition but -- now,**  
 12 **the only thing that can be changed, the word**  
 13 **changed, is point of diversion, place of use,**  
 14 **and use made of water. Now, if we want to talk**  
 15 **about modifications, to us there's a difference**  
 16 **in a change and a modification.**  
 17 Q. Well, and I'll just read it for the -- I'll sum  
 18 it up for the record. On page 56, line 8 of  
 19 your deposition, you stated that there were  
 20 several examples of -- minor examples of how a  
 21 water right could be changed without any kind of  
 22 change application or new application, and you  
 23 said if one wanted to change the meter  
 24 requirements, one wanted to reduce the amount of  
 25 water used, or even divide the water right, a

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1 change application or a new application was not  
 2 required. Was that your testimony?  
 3 **A. That's correct.**  
 4 Q. And I think you also said in your deposition  
 5 testimony that typographical errors could also  
 6 be changed in a water right without any kind of  
 7 change application, is that also what you  
 8 stated?  
 9 **A. Correct.**  
 10 Q. And I believe that you also opined in your  
 11 deposition that with respect to the City's  
 12 proposal, it's your belief that there's no  
 13 change application needed. Is that still your  
 14 testimony?  
 15 **A. Well, there's -- a change application couldn't**  
 16 **be used because we're not changing the point of**  
 17 **diversion, place of use, or use made of water.**  
 18 Q. Can a change application be used to expand a  
 19 water right in the sense of increasing the  
 20 amount of water to be used?  
 21 **A. No.**  
 22 Q. And, in fact, would you agree with me that if  
 23 one's trying to expand the amount of water to be  
 24 used, you can't do it unless you file a new  
 25 application or for a new permit? Is that a true

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1 statement?  
 2 **A. That's correct.**  
 3 Q. Now, at least as it relates to the City's  
 4 proposal, would you agree with me that there's  
 5 no new application here and there's no change  
 6 application that's been filed?  
 7 **A. That's correct.**  
 8 Q. And at least as the proposal exists before us  
 9 today, there -- there isn't a new permit that  
 10 has been requested, correct?  
 11 **A. Correct.**  
 12 Q. In fact, the City is trying to modify a prior  
 13 permit essentially, is that what's going on  
 14 here?  
 15 **A. They're trying to lower the index cell level as**  
 16 **a permit condition, that's correct. But they're**  
 17 **not -- they're not seeking to divert additional**  
 18 **water here.**  
 19 Q. We'll circle back to that, Mr. Letourneau, but  
 20 for our purposes, with respect to a change  
 21 application, what must an owner demonstrate when  
 22 applying for a change application?  
 23 **A. They must demonstrate it's the same local source**  
 24 **of supply and demonstrate they won't impair**  
 25 **existing water rights. And I think there's**

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1 **another one, but I don't have 706(b) -- or**  
 2 **708(b) in front of me.**  
 3 Q. I would ask that you turn to Exhibit 21,  
 4 although it's not an official exhibit for the  
 5 record, if you could go to 21. Turn with me to  
 6 pages 8 through 9 which is where I think you'll  
 7 find K.S.A. 82a-708(b).  
 8 **A. I'm there.**  
 9 Q. Is that the statute you were looking for,  
 10 Mr. Letourneau?  
 11 **A. Yep, correct. And, again, that's titled**  
 12 **Application for Change in Place of Use, Point of**  
 13 **Diversion, or Use, and that's -- when I said use**  
 14 **made of water, it's use.**  
 15 Q. And what requirements must be shown or  
 16 demonstrated by the applicant pursuant to this  
 17 statute?  
 18 **A. Demonstrate to the chief engineer that any**  
 19 **proposed change is reasonable and will not**  
 20 **impair existing water rights, demonstrate to the**  
 21 **chief engineer that the proposed change relates**  
 22 **to the same local source of supply as to which**  
 23 **the water right relates.**  
 24 Q. And then what's number 4?  
 25 **A. Receive the approval of the chief engineer with**

1 **respect to any proposed change.**  
2 Q. And then I think in the next sentence, it says  
3 that the chief engineer shall approve or reject  
4 the application for change in accordance with  
5 the provisions and procedures prescribed for  
6 processing original applications for permission  
7 to appropriate water. So in other words, this  
8 statute circles back to the same requirements  
9 that must be shown to get an original  
10 application to appropriate water; is that true?  
11 **A. That's true.**  
12 Q. If one is seeking an original application to  
13 appropriate water, must the applicant show that  
14 there's compliance, for example, with safe yield  
15 regulations?  
16 **A. In 711, it refers to safe yield, reasonable**  
17 **raising and lowering -- area, safe yield,**  
18 **reasonable raising and lowering, shall not**  
19 **impair.**  
20 Q. Well, let's go ahead and turn to page 12 of this  
21 notebook where we find K.S.A. 82a-711, and you  
22 agreed with me that 708(b) references that an  
23 applicant, when they're seeking a change  
24 application, must also show the requirements  
25 that an applicant must show when applying for a

1 new application, right?  
2 **A. That's correct.**  
3 Q. And so in K.S.A. 82a-711, there's -- in  
4 subsection (b), it says, in ascertaining whether  
5 a proposed use will prejudicially and  
6 unreasonably affect the public interest, the  
7 chief engineer shall take into consideration,  
8 could you read for the record 1 through 5?  
9 **A. Established minimum desirable streamflow**  
10 **requirements; the area, safe yield, and the**  
11 **recharge rate of the appropriate water supply;**  
12 **the priority of existing claims of all persons**  
13 **to use the water of the appropriate water**  
14 **supply; the amount of each claim to use water**  
15 **from the appropriate water supply; and all other**  
16 **matters pertaining to such question.**  
17 Q. Now, Mr. Letourneau, am I correct that at least  
18 at some point as we were going through this  
19 whole AMC proposal and this hearing phase, would  
20 you agree that at least at some point it was the  
21 position of the Division of Water Resources that  
22 the City of Wichita would have to show that they  
23 were in compliance with all five of those  
24 requirements?  
25 **A. Well, the AMC -- okay, it's not the same local**

1 **source of supply because the local source of**  
2 **supply is the Equus Beds and these are recharge**  
3 **credits. So we considered it a different**  
4 **source. And then they're not subject to safe**  
5 **yield because it's not Equus Beds water. And,**  
6 **let me see, the priority of existing claims,**  
7 **they will be -- recharge credits have to be**  
8 **picked up with an appropriation of water that is**  
9 **junior. So -- and MDS, yeah, they'll be subject**  
10 **to MDS, but if the aquifer is at a -- operated**  
11 **at a more full state, it's better for**  
12 **streamflow. So, yeah, I mean, generally we --**  
13 **we would have taken this into consideration**  
14 **but ...**  
15 Q. And I can pull up, I believe, a prior order in  
16 this case from the chief engineer indicating  
17 that these requirements would need to be shown,  
18 but would you agree with me that at least at  
19 some point it was the Division of Water  
20 Resources' position that the City of Wichita  
21 would at least have to address how they could  
22 meet or be exempted from these five  
23 requirements?  
24 **A. Well, they wouldn't be exempted, but, yeah,**  
25 **any -- any new appropriation is subject to these**

1 **items, yes. But these aren't -- we don't have a**  
2 **new appropriation here, and we don't have a**  
3 **change application in front of us. And the AMCs**  
4 **are still subject to what's already been**  
5 **approved, the 19,000 acre-feet of recharge**  
6 **credits are already approved.**  
7 Q. If recharge credits weren't exempt from safe  
8 yield requirements, would you agree that safe  
9 yield requirements would apply to the City's  
10 proposal?  
11 **A. No, 'cause they're still a recharge credit.**  
12 Q. But my question, I guess, and I didn't word it  
13 properly, the reason we're not applying safe  
14 yield here is because there's a specific  
15 exemption for recharge credits from safe yield;  
16 is that correct?  
17 **A. Correct.**  
18 Q. And if that exemption, for example, didn't  
19 exist, then safe yield would apply; is that  
20 right?  
21 **A. However the GMD's rule would be written. Right**  
22 **now they're exempt, but if the GMD's rules said**  
23 **that they had to be -- had to meet safe yield,**  
24 **then, yes, they would have to meet safe yield.**  
25 Q. And I think you already answered this, it

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1 indicates that it has to be the same source of  
 2 supply, I think you indicated that with respect  
 3 to an aquifer maintenance credit, the source of  
 4 supply has changed, is that -- is that true,  
 5 from the prior ASR Phase II orders? Or prior  
 6 ASR Phase II physical recharge credits?  
 7 **A. Well, they're the same recharge credits. I**  
 8 **mean, so any recharge credit is not Equus Beds**  
 9 **water, and so whether it's a physical recharge**  
 10 **credit or an aquifer maintenance credit, it's a**  
 11 **recharge credit and it's different than Equus**  
 12 **Beds.**  
 13 Q. I guess maybe I'm unclear what you're saying.  
 14 You're saying that the water that's left in  
 15 storage through the City's aquifer maintenance  
 16 credits is not Equus Beds water?  
 17 **A. Well, we -- it's not diverted but it does -- we**  
 18 **do change -- change it from Equus Beds to**  
 19 **recharge credit because there is no space in the**  
 20 **aquifer. So that is a change.**  
 21 Q. But --  
 22 **A. Well, let me say -- I'm sorry, David, let me say**  
 23 **modification, because I don't want to get**  
 24 **changes confused -- confused with modifications.**  
 25 Q. But with an ASR Phase II credit, water is

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1 injected into the aquifer, true?  
 2 **A. True.**  
 3 Q. And then when that water is taken back out of  
 4 the aquifer, it's the same source water that was  
 5 injected. Is that a true statement?  
 6 **A. That's true.**  
 7 Q. But with respect to an aquifer maintenance  
 8 credit, there's no source water injected into  
 9 the aquifer, true?  
 10 **A. True.**  
 11 Q. And so because of that, there's no source water  
 12 available to take back out of the aquifer under  
 13 an aquifer maintenance credit. Is that also  
 14 true?  
 15 **A. Can you ask me that again?**  
 16 Q. Well, if there's no source water injected into  
 17 the aquifer pursuant to an aquifer maintenance  
 18 credit, there's not source water in the aquifer  
 19 to then take back out later, true?  
 20 **A. Under the -- yes, under that scenario.**  
 21 Q. So I guess my question, then, is -- is this:  
 22 With respect to an ASR Phase II recharge credit  
 23 versus an aquifer maintenance credit, would you  
 24 agree with me at the point that the water is  
 25 withdrawn from the aquifer, the source, at least

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1 at that point, has changed?  
 2 **A. Yes.**  
 3 Q. And I think you also would agree with me on a  
 4 surface level here that the Division of Water  
 5 Resources has not filed for any kind of change  
 6 application or paid any kind of fee to do so?  
 7 **A. You mean the City of Wichita?**  
 8 Q. I'm sorry, strike that question from the record.  
 9 Would you agree with me that the City of Wichita  
 10 has not filed a change application or paid a fee  
 11 to do so?  
 12 **A. There's -- it wouldn't be appropriate because**  
 13 **they're not changing point of diversion, place**  
 14 **of use, or use made of water.**  
 15 Q. And so they haven't done it, correct?  
 16 **A. Correct.**  
 17 Q. Did the City file any kind of new application  
 18 to -- or seek a new permit for these aquifer  
 19 maintenance credits?  
 20 **A. There was a series of new applications filed for**  
 21 **more than 19,000 acre-feet of recharge credits,**  
 22 **and I -- I'd have to ask the -- I don't**  
 23 **remember, I think it was up to about 30,000**  
 24 **acre-feet of authority for recharge credits, but**  
 25 **then the City requested that those be dismissed.**

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1 **And so what we have in front of us now is**  
 2 **approved 19,000 acre-feet of recharge credits.**  
 3 **PRESIDING OFFICER:** And can I ask  
 4 where that's written? I've tried to find  
 5 it and I haven't. I'm sure I'm just  
 6 missing it but ...  
 7 **A. What's been written that --**  
 8 **PRESIDING OFFICER:** The 19,500 limit  
 9 on withdrawing credits?  
 10 **A. Oh, okay. Well, yeah, we can put that together**  
 11 **for you. What that is, we just added up --**  
 12 **PRESIDING OFFICER:** No, I'm sorry,  
 13 I'm -- where is that documented? Is that a  
 14 condition in the permit, is that -- I'm not  
 15 sure where -- I've heard that a couple  
 16 times, and that was one of my questions for  
 17 today was where is that documented?  
 18 **A. Well, it's the approved app -- we'll get that**  
 19 **for you, it's the current approved applications,**  
 20 **when we add them all up, it's the 19,000**  
 21 **acre-feet. So they've got approval for --**  
 22 **they've got approved applications to recover**  
 23 **19,000 acre-feet of recharge credits when**  
 24 **they're available.**  
 25 **PRESIDING OFFICER:** And that comes

1 from adding up all of the additional ASR  
 2 permits for Phase II?  
 3 **A. Correct.**  
 4 **BY MR. STUCKY:**  
 5 Q. And my esteemed colleague has a list of all the  
 6 permit numbers the City has. If we were to add  
 7 those -- the cumulative effect of those permits  
 8 for each year, that's where we get this 19,000  
 9 acre-feet?  
 10 **A. It's 19,000 or 19,500, I'm not quite sure, but**  
 11 **it's -- but, yes, that's where -- that's where**  
 12 **it comes from.**  
 13 **PRESIDING OFFICER:** Thank you.  
 14 Sorry to interrupt.  
 15 **A. Oh, no, it's important.**  
 16 **BY MR. STUCKY:**  
 17 Q. So you mentioned that there were some  
 18 applications for new permits where the City was  
 19 seeking to increase that amount; is that true?  
 20 **A. Correct.**  
 21 Q. And those permits have been withdrawn; is that  
 22 correct?  
 23 **A. That's correct.**  
 24 Q. So as we sit here today, as we discuss the  
 25 City's proposal, would you agree with me that

1 **A. No, impairment, if we would want to go to**  
 2 **706(b), first sentence of 706(b).**  
 3 Q. Please read that for the record.  
 4 **A. Okay. It shall be unlawful for any person to**  
 5 **prevent, by diversion or otherwise, any waters**  
 6 **of this state from moving to a person having a**  
 7 **prior right to use the same, or for any person**  
 8 **without agreement with the State of Kansas to**  
 9 **divert or take any water that has been released**  
 10 **from storage under the authority of the water**  
 11 **reservation rights held by the State of Kansas.**  
 12 **That's what we consider impairment.**  
 13 Q. Okay. Well, could you turn back to K.S.A.  
 14 82a-711?  
 15 **A. Okay.**  
 16 Q. Once again, this is a statute I believe you're  
 17 quite familiar with; is that correct?  
 18 **A. Absolutely.**  
 19 Q. Could you read for me subsection (c) of K.S.A.  
 20 82a-711, that first sentence?  
 21 **A. With regard to whether the proposed use will**  
 22 **impair a use under an existing water right,**  
 23 **impairment shall include the unreasonable**  
 24 **raising or lowering of the static water level or**  
 25 **the unreasonable increase or decrease of**

1 there's no new application for a permit pending  
 2 before us today?  
 3 **A. I agree.**  
 4 Q. And, in fact, the City hasn't paid any kind of  
 5 fee or anything of that nature to the Division  
 6 of Water Resources to seek a new permit as we  
 7 sit here today?  
 8 **MR. MCLEOD:** Asked and answered.  
 9 **BY MR. STUCKY:**  
 10 Q. I ask with respect to a fee?  
 11 **A. There's no application, no filing fee, correct.**  
 12 Q. Would you agree with me that the City, with  
 13 respect to this proposal, needs to show that  
 14 their -- their proposal isn't going to cause  
 15 impairment to the aquifer?  
 16 **A. Well, it would be impairment to existing water**  
 17 **rights. We -- we don't have the authority on**  
 18 **impairment to an aquifer, but we have authority**  
 19 **on impairment to existing water rights.**  
 20 Q. Would you agree, then, that the City must show  
 21 or demonstrate that they're not going to cause  
 22 impairment to existing water rights?  
 23 **A. Yes.**  
 24 Q. Would you agree that an aspect of impairment is  
 25 not unreasonably lowering the water table?

1 **streamflow or the unreasonable deterioration of**  
 2 **the water quality at a water user's point of**  
 3 **diversion beyond a reasonable economic limit.**  
 4 Q. So as it relates to K.S.A. 82a-711, there's  
 5 some -- some flesh put on the bones of what  
 6 constitutes impairment; is that right?  
 7 **A. That's correct.**  
 8 Q. And there's at least three components I think I  
 9 see here. First of all, one must show that  
 10 there's not an unreasonable raising or lowering  
 11 of the static water level; is that true?  
 12 **A. That's true.**  
 13 Q. And the applicant must also show that there's  
 14 not an unreasonable increase or decrease of the  
 15 streamflow; is that also true?  
 16 **A. That's true.**  
 17 Q. And the applicant must also show that there's  
 18 not an unreasonable deterioration of the water  
 19 quality; is that also true?  
 20 **A. That's true.**  
 21 Q. So now as we go back to the definition of  
 22 impairment, would you agree now that the City  
 23 would have to show that all three of those  
 24 conditions are met?  
 25 **A. Yes, but those statutes work together. I mean,**

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1 **you can have a lowering of the water table as**  
 2 **long as you do not take water that somebody else**  
 3 **has the right to. That's the Ogallala Aquifer**  
 4 **every day. And so --**  
 5 Q. So in other words, these statutes, whether it's  
 6 K.S.A. 82a-708(b) or 711, they must be construed  
 7 together is your opinion?  
 8 **A. Correct.**  
 9 **MR. OLEEN:** Objection, calls for a  
 10 legal conclusion.  
 11 **PRESIDING OFFICER:** Okay.  
 12 **BY MR. STUCKY:**  
 13 Q. Is it also your belief that the City must show  
 14 that this proposal won't prejudicially and  
 15 unreasonably affect the public interest?  
 16 **A. Yes.**  
 17 Q. And are some of the aspects of what it means to  
 18 prejudicially and unreasonably affect the public  
 19 interest, is one of those minimum desirable  
 20 streamflow?  
 21 **A. Yes.**  
 22 Q. And generally speaking, and, again, we're going  
 23 to back up because we're going to disagree with  
 24 respect to the application to the proposal, but  
 25 in a general sense, would you agree that part of

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1 determining what's in the public interest would  
 2 be conducting safe yield calculations?  
 3 **A. Well, not for the ASR proposal.**  
 4 Q. Okay. And, again, I'm excepting out the ASR  
 5 proposal.  
 6 **A. Okay.**  
 7 Q. But in general, would you agree that safe yield  
 8 calculations are part of what helps to determine  
 9 what's in the public interest?  
 10 **A. Yes. Yep.**  
 11 Q. Just so we have a clear record, I'm not sure  
 12 this has been stated on the record, what is the  
 13 concept of safe yield?  
 14 **A. Well, safe yield is, in simple terms, the amount**  
 15 **of water the aquifer will safely provide.**  
 16 Q. And in other words, if a given location is  
 17 over-appropriated and there's not water  
 18 available and an applicant is applying for a  
 19 water right, that water right would be denied if  
 20 it's in violation of those safe yield  
 21 principles, correct?  
 22 **A. Correct.**  
 23 Q. When one -- when the Division of Water Resources  
 24 is trying to determine what's in the public  
 25 interest, does the Division of Water Resources

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1 also consider the priority of existing water  
 2 rights?  
 3 **A. Yes, and that -- that's even stated in 711, that**  
 4 **we -- the priority of existing claims of all**  
 5 **persons to use the water of the appropriate**  
 6 **water supply. So, yes, I mean, we look at**  
 7 **priority.**  
 8 Q. Earlier, a few weeks ago, and if your memory  
 9 still serves you in this regard, Mr. Oleen asked  
 10 you about a letter that was submitted by the  
 11 Chief Engineer Barfield with regard to this AMC  
 12 proposal. Do you recall the discussion on that  
 13 letter?  
 14 **A. Yes.**  
 15 Q. And in that letter, Mr. Barfield states that  
 16 it's his view that the aquifer maintenance  
 17 credits, at least at that time, were in the  
 18 public interest. Is that a true statement?  
 19 **A. Yes.**  
 20 Q. Is it still your belief that aquifer maintenance  
 21 credits are in the public interest?  
 22 **A. Yeah, we -- the Division right now, we stand --**  
 23 **we stand behind David Barfield's two letters.**  
 24 Q. But you would, at least, agree that although  
 25 that's the position of the Division of Water

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1 Resources, this determination now is up to a  
 2 different hearing officer; is that right?  
 3 **A. Yes.**  
 4 Q. Now, if it was determined clear back in 2017  
 5 that the City's proposal was in the public  
 6 interest, would you also agree with me that the  
 7 Division of Water Resources made that initial  
 8 determination through Mr. Barfield prior to the  
 9 City's proposal being submitted?  
 10 **A. I'd have to see the dates, David, I'm not sure**  
 11 **about that. I got to -- I'd have to look at the**  
 12 **dates.**  
 13 Q. I'll circle back to that.  
 14 **A. Okay.**  
 15 Q. When the Division of Water Resources first  
 16 determined that the City's proposal was in the  
 17 public interest, did the Division of Water  
 18 Resources consider minimum desirable streamflow  
 19 to help formulate that opinion?  
 20 **A. You know, the discussion we had about minimum**  
 21 **desirable streamflow is the aquifer is now being**  
 22 **managed at a higher level, and as the higher**  
 23 **level of the aquifer discharges into the stream**  
 24 **that it's -- it's better for minimum desirable**  
 25 **streamflow. The high -- and what we looked at**

1 **was the higher aquifer conditions are better**  
2 **for -- better for MDS.**

3 Q. And just so we have a clear distinction, when  
4 we're talking higher aquifer conditions, we're  
5 talking about the higher aquifer based on the  
6 City pumping out of the Little Arkansas River  
7 and treating it and sending to the City and not  
8 pumping out of the aquifer, is that why the  
9 aquifer levels would be higher?

10 **A. Yes.**

11 Q. But would you also agree with me that at least  
12 at the point when the City, if you will, cashes  
13 in their aquifer maintenance credits, at that  
14 point, the City would start to pump water out of  
15 the aquifer; is that true?

16 **A. That's true.**

17 Q. So at least we're -- when we're talking higher  
18 water levels, we're not talking about the point  
19 in time in which the City cashes in their  
20 aquifer maintenance credits, if you will; is  
21 that -- is that true?

22 **A. Well, no, going into -- this proposal going into**  
23 **a 1 percent drought, the aquifer is at a higher**  
24 **level, so they would cash in their recharge**  
25 **credits, once -- once they pump their 40,000,**

1 be an industrial user or an irrigation user, in  
2 that sense, this water is part of a larger  
3 aquifer, the Equus Beds Aquifer; is that -- is  
4 that true?

5 **A. Well, that's where it's stored, but it's a**  
6 **different source of water.**

7 Q. Okay. I'm just trying to understand. You're  
8 saying that we have the Equus Beds Groundwater  
9 Management aquifer -- or, I'm sorry, that's not  
10 the official term, strike that. We have the  
11 Equus Beds Aquifer on one hand, and you're  
12 saying the basin storage area is something  
13 different, is that what your testimony is?

14 **A. Well, it's located in the aquifer, but it's a**  
15 **different source of water in the aquifer.**

16 Q. So if an irrigator is withdrawing water out of  
17 the basin storage area, you're saying that's  
18 water they're withdrawing out of the basin  
19 storage area?

20 **A. That's -- that's water from the Equus Beds.**

21 Q. Well, if the -- if the -- if an irrigator,  
22 though, is taking water that is found in the  
23 basin storage area and they're using it for  
24 irrigation purposes, is that water being taken  
25 out of the Equus Beds Aquifer, or is it water

1 **they'd cash in their recharge credits, the**  
2 **aquifer would be at a higher level, that's what**  
3 **this proposal is about.**

4 Q. But at the point when they cash them in, then  
5 they would start to deplete the aquifer at that  
6 point; is that true?

7 **A. Maybe. I mean, we just have to see the aquifer**  
8 **conditions at the time.**

9 Q. Well, if they were to cash in the aquifer  
10 maintenance credit, if you will, they would take  
11 water out of the aquifer at that point, true?

12 **A. They would take water out of the basin storage**  
13 **area.**

14 Q. Which is part of the aquifer?

15 **A. No, it's -- it's a tank in the aquifer, we'll**  
16 **call it. It's -- it's space in the aquifer, but**  
17 **it's not the aquifer.**

18 Q. With respect to the basin storage area, that  
19 space in the aquifer, is there irrigation rights  
20 where they have the right to take water out of  
21 that area that we're considering the basin  
22 storage area?

23 **A. Yes, everybody can take water out of there.**

24 Q. So in the sense that other constituents can take  
25 water out of this basin storage area, whether it

1 being taken out of the basin storage area?

2 **A. Equus Beds.**

3 Q. Okay. But on the other hand, if the City is  
4 pumping water, let's say their 40,000 acre-feet  
5 of native credits, and they're pumping that  
6 water out of the basin storage area, is that  
7 Equus Beds water or basin storage area water?

8 **A. Their native water rights are Equus Beds.**

9 Q. So the distinction you're making here is if it's  
10 the accumulation of an aquifer maintenance  
11 credit, you're saying that's water that's in the  
12 basin storage area, that's the distinction  
13 you're making here?

14 **A. Correct.**

15 Q. We were talking about the concept of minimum  
16 desirable streamflow just a moment ago when we  
17 went off on that clarification. You indicated  
18 that as the City was coming to the Division of  
19 Water Resources and discussing whether or not  
20 this would be in the public interest, this  
21 concept that minimum desirable streamflow would  
22 be protected was -- was based on the fact that  
23 water would be left in storage and the aquifer  
24 would be kept full. Is that -- is that a true  
25 statement?



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1 **A. Yes.**  
 2 Q. Did the Division of Water -- and I think you  
 3 answered this a couple weeks ago, but did the  
 4 Division of Water Resources do any kind of  
 5 independent calculations or modeling or  
 6 research, if you will, to determine that minimum  
 7 desirable streamflow would be protected through  
 8 the City's proposal?  
 9 **A. No. There's only two areas in the state, this**  
 10 **not being one of them, that -- well, there's one**  
 11 **that we regulate groundwater for minimum**  
 12 **desirable streamflow, and that's the Republican**  
 13 **River, and then prob -- soon we will be**  
 14 **administering groundwater for minimum desirable**  
 15 **streamflow in Rattlesnake Creek in 2021, but we**  
 16 **had not administered minimum desirable**  
 17 **streamflow groundwater rights in this particular**  
 18 **basin. Now, with that said, anything junior to**  
 19 **1984 is subject to minimum desirable streamflow.**  
 20 **But we -- but we have not done that in this**  
 21 **basin.**  
 22 Q. Would you agree that the City's permits as they  
 23 relate to obtaining recharge credits pursuant to  
 24 ASR Phase I and ASR Phase II, would you agree  
 25 that those permits were sought post 1985, that

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1 cutoff --  
 2 **A. So '84 --**  
 3 Q. -- date you mentioned?  
 4 **A. I'm sorry, David, I interrupted you. 1984, they**  
 5 **were post 1984.**  
 6 Q. So in other words, the City's permits as they  
 7 exist with respect to ASR Phase I and Phase II,  
 8 minimum desirable streamflow would apply to  
 9 those permits; is that true?  
 10 **A. Yes.**  
 11 Q. And I think you already answered that with  
 12 respect to minimum desirable streamflow, the  
 13 Division of Water Resources didn't conduct  
 14 independent analysis or investigation of how  
 15 minimum desirable streamflow would be protected  
 16 through the City's proposal?  
 17 **A. No.**  
 18 Q. And did the Division of Water Resources consider  
 19 what the impact would be on minimum desirable  
 20 streamflow at the point that these aquifer  
 21 maintenance credits are cashed in?  
 22 **A. No, but we don't do that with any -- any**  
 23 **applications or permits. What happens is if --**  
 24 **and, again, we don't regulate groundwater here,**  
 25 **but if these -- if we did, like the Republican**

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1 **River, we approve new applic -- we approved new**  
 2 **applications and they're subject to, I'll say**  
 3 **MDS if the flows at the gages go below a certain**  
 4 **number of days, and then we do issue orders and**  
 5 **we administer water rights as if the 1984 was a**  
 6 **water right, you know, the gage on the river was**  
 7 **a water right with a 1984 priority. And these**  
 8 **will have that same type of condition.**  
 9 Q. So back at the time in 2011 when Chief Engineer  
 10 Barfield first determined that these aquifer  
 11 maintenance credits were in the public interest,  
 12 would you agree with me that because they were  
 13 considered exempt, there were no safe yield  
 14 calculations conducted?  
 15 **A. That's true.**  
 16 Q. What analysis was done back in 2017 to ensure  
 17 that the City's proposal wouldn't cause  
 18 impairment? And let me break that down for you  
 19 just a little bit. What analysis was done back  
 20 in 2017 to ensure that the City's proposal  
 21 wouldn't unreasonably raise or lower the static  
 22 water level of the aquifer?  
 23 **A. Well, that's a question for our modelers that**  
 24 **I'm not -- I'm not privy to that group right**  
 25 **now.**

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1 Q. So at least at this point you're not sure?  
 2 **A. I'm not sure what analysis was done, but we**  
 3 **would have used, I know that team would have**  
 4 **used the model and what's proposed. And when**  
 5 **you look at the -- those figures with the static**  
 6 **water levels in there, it did not seem**  
 7 **unreasonable to those folks that there was an**  
 8 **unreasonable lowering. There's -- you know,**  
 9 **we're talking about the top 10 percent of this**  
 10 **aquifer, and so that's what they -- but, again,**  
 11 **that's -- that's part of the team that they**  
 12 **would have to answer that.**  
 13 Q. Back in 2017, do you know what analysis the  
 14 Division of Water Resources did with respect to  
 15 water quality as it relates to the City's  
 16 proposal?  
 17 **A. No, I don't know what they did. But then again**  
 18 **we're not changing -- there's no proposed**  
 19 **modification to Phase I, and that was the bigger**  
 20 **water quality component of ASR, if I recall**  
 21 **correctly. And then I know that there's**  
 22 **concerns about the gradient of the salt plume,**  
 23 **but trying to manage the aquifer in a more full**  
 24 **condition, then the gradient should not be there**  
 25 **to move the salt plumes.**

1 Q. But as you're sitting here today and you're  
2 testifying as the expert for the Division of  
3 Water Resources, you haven't seen any analysis  
4 or research, if you will, from the Division of  
5 Water Resources that indicates the impact that  
6 the City's proposal will have on water quality,  
7 correct?

8 **A. That's correct.**

9 Q. Last time when we were here, we talked about  
10 several different well logs that showed that the  
11 practical saturated thickness was actually less  
12 than what was calculated in the City's proposal.  
13 Do you recall that discussion?

14 **A. I recall those were observation wells.**

15 Q. And based on that discussion, do you believe,  
16 then, that there's now more concern about  
17 whether or not the City's proposal is, in fact,  
18 in the public interest?

19 **A. You know, those were -- you know, that raised a  
20 good question, I -- we have to say that, but  
21 then we did not look at well logs from  
22 production wells. And so we would -- there  
23 were, you know, a good number of observation  
24 wells, but then it would be good to look at a  
25 good number of production wells and then get an**

1 changing the circumstances under which those  
2 recharge credits can be withdrawn. Is that also  
3 right?

4 **A. Well, it's -- do you mean in order of priority,  
5 David, is that -- when you say about withdrawn,  
6 can you help me with that?**

7 Q. In other words -- well, how they're accumulated  
8 and the circumstances under which they're  
9 withdrawn in the sense that there's no water  
10 injected into the aquifer; is that -- is that  
11 true?

12 **A. Well, withdrawing the recharge credits, it's the  
13 same, it's under the authority of that 19,000  
14 acre-feet.**

15 Q. I guess let me ask it this way: Is the City  
16 seeking to lower the minimum index level and in  
17 that sense change their permitting proposal from  
18 ASR Phase I?

19 **A. They are proposing to lower the index levels.**

20 Q. So in the sense that they're seeking to be able  
21 to withdraw recharge credits when the bottoms on  
22 the aquifer are lower, that's changing the  
23 circumstances under which those recharge credits  
24 can be withdrawn; is that right?

25 **A. Yes, they could leave them in the aquifer**

1 **average of the production versus the observation  
2 wells.**

3 **Now, I don't know if -- if those were  
4 observation wells picked on a location or if  
5 those were originally test drilled and test  
6 pumped to see what that might produce. But  
7 some -- some well logs from some production  
8 wells would be good to look at also. But I have  
9 to say for your question, yeah, it raised a  
10 question.**

11 Q. So as you're sitting here today, would it be  
12 your recommendation, then, in the future to look  
13 at some of those production wells and look at  
14 some other well log data to ensure that the  
15 static water level is protected by the City's  
16 proposal?

17 **A. Yeah, but the average is the average; that would  
18 be good to look at.**

19 Q. With respect to the City's aquifer maintenance  
20 credit proposal, you told me, I think, a moment  
21 ago that the City is seeking to change how  
22 recharge credits can be accumulated; is that --  
23 is that right?

24 **A. Correct.**

25 Q. And I think you also told me that the City is

1 **longer.**

2 Q. Is the concept of the 1993 level, that current  
3 minimum index level, is that a fundamental  
4 aspect of ASR Phase I and Phase II orders?

5 **A. Yes. And I bet MDS wasn't looked at when we did  
6 those levels, you know.**

7 Q. Would you agree, then, if we're seeking to lower  
8 that bottom from the 1993 level to a new level,  
9 that's a fundamental change to those permits?

10 **A. It's a fundamental modification to the permit  
11 conditions.**

12 Q. And I think you also indicated that we're making  
13 a fundamental change to those prior permits in  
14 the sense of how the recharge credits are  
15 accumulated, that accounting; is that -- is that  
16 true?

17 **A. We're making a modification to the accounting.**

18 Q. In this hearing, I believe I've heard quite a  
19 bit of discussion about the benefits of leaving  
20 water in the aquifer and leaving the aquifer  
21 fuller, there's been a lot of discussion about  
22 that; is that correct?

23 **A. That's correct.**

24 Q. But on the other hand, it's at least my  
25 editorial view that there's been less discussion

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1 about the impacts of the City's proposal when we  
 2 actually withdraw those credits, those AMC  
 3 credits in the future, so I'd like to focus on  
 4 that. Do you believe that at the point that the  
 5 aquifer maintenance credits are withdrawn it  
 6 could -- it will take water out of the aquifer?  
 7 **A. Any recharge credit will take water out of the**  
 8 **basin storage area.**  
 9 Q. And so when these aquifer maintenance credits  
 10 are withdrawn, would you agree at that point,  
 11 water is taken out of the basin storage area?  
 12 **A. Yes.**  
 13 Q. And so at least at that point, would you agree  
 14 that depending on how much water is taken out,  
 15 there's the potential to deplete the basin  
 16 storage area at that point?  
 17 **A. Yes.**  
 18 Q. And just so we're clear here, we've had a lot of  
 19 discussion about drought modeling and taking out  
 20 these credits during the time of a drought, but  
 21 would you agree with me that the City under  
 22 their current proposal could withdraw these  
 23 aquifer maintenance credits both in a time of  
 24 drought and actually any other time for that  
 25 nature?

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1 **A. Yes.**  
 2 Q. So would you agree with me, at least, that at  
 3 the point when these aquifer maintenance credits  
 4 are withdrawn and water is taken out, it would  
 5 cause the water -- the static water level at the  
 6 basin storage area to decline?  
 7 **A. It could, yes.**  
 8 Q. At the point that this basin storage area is  
 9 starting to decline because these recharge  
 10 credits are being withdrawn, at that point, is  
 11 there the potential for that to accelerate the  
 12 migration of the chloride plume near Burrton, or  
 13 do you know?  
 14 **A. I don't know. It would depend on where the**  
 15 **recharge credits were pumped from. That would**  
 16 **be the biggest thing, but I don't -- at**  
 17 **19,000 -- I mean, 19,000 acre-feet, I don't know**  
 18 **how much that would move the salt plume.**  
 19 Q. Is that something that you believe there should  
 20 be a proper analysis on?  
 21 **A. I mean, that's -- I'm sure it's already been**  
 22 **done at 19,000, right? When -- when Phase I and**  
 23 **Phase II was done, I'm sure that analysis was**  
 24 **done. And this is not any more water than from**  
 25 **Phase I or Phase II.**

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1 Q. Well, at least the distinction, though, I think,  
 2 and, again, for -- in a simple sense, I think  
 3 everyone understands is in ASR Phase I and Phase  
 4 II, the City was injecting water into the  
 5 aquifer; is that right?  
 6 **A. That's true.**  
 7 Q. So with the -- so I'm asking specific to the  
 8 aquifer maintenance credit proposal, are you  
 9 aware of any analysis that's been provided by  
 10 the Division of Water Resources or the City that  
 11 suggests to you what the impacts to water  
 12 quality will be at the point that an aquifer  
 13 maintenance credit is withdrawn?  
 14 **A. Not to me but I don't know about the modelers.**  
 15 Q. Under the City's proposal, they're proposing a  
 16 cap on both the ASR Phase II credits and the  
 17 aquifer maintenance credits of 120,000  
 18 acre-feet. Is that a true statement?  
 19 **A. That's true.**  
 20 Q. So there's the possibility, at least, that if  
 21 120,000 acre-feet of credits were accumulated,  
 22 the City could cash them in at the rate of  
 23 19,000 acre-feet a year; is that -- is that  
 24 true?  
 25 **A. That's true.**

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1 Q. At the point, if we were to assume the City was  
 2 to cash in this entire 120,000 acre-feet of  
 3 credits, at that point, could it have the  
 4 potential over a number of years to deplete the  
 5 basin storage area by 120,000 acre-feet?  
 6 **MR. OLEEN:** I respectfully object  
 7 because of relevance. Again, this is a  
 8 hypothetical that's not before us, and I --  
 9 I think it's irrelevant, and I also think  
 10 it's prejudicial in the sense that it, in  
 11 my opinion, it's an attempt to make the  
 12 proposal before us seem scarier than it is  
 13 by talking about, well, what if in the  
 14 future this proposal looks different than  
 15 it does today and the City can withdraw  
 16 120,000 acre-feet of recharge credits in  
 17 one year? That's not what's before us, and  
 18 that's misleading the public to think that  
 19 that's before us right now.  
 20 **PRESIDING OFFICER:** Did you ask  
 21 about 120,000 acre-feet of credits in one  
 22 year?  
 23 **MR. STUCKY:** No, I did not, over  
 24 time, at the rate of 19,000 acre-feet a  
 25 year and --

1 **PRESIDING OFFICER:** Okay. Let me  
2 address the objection. This entire  
3 proposal is based on projections into the  
4 future, and I think this is a legitimate  
5 question because if we're trying to figure  
6 out what will this proposal do and not do  
7 and what are the impacts, it's all about  
8 trying to decide what it could do in the  
9 future. So I think since this is something  
10 that is currently possible to happen under  
11 the current proposal, then this line of  
12 questioning is appropriate.

13 **MR. OLEEN:** But it's not possible to  
14 withdraw 120,000 in one year and if he --  
15 if I misheard, then I withdraw my  
16 objection.

17 **PRESIDING OFFICER:** Okay. I think  
18 you misheard because you were not asking  
19 about one year?

20 **MR. STUCKY:** No.

21 **PRESIDING OFFICER:** Just reaching  
22 the 120,000 acre-foot cap at some point?

23 **MR. STUCKY:** Yeah.

24 **PRESIDING OFFICER:** Okay.

25 **BY MR. STUCKY:**

1 north of 50,000 acre-feet of recharge credits  
2 during an eight-year drought, that's on one  
3 hand, right?

4 **A. Right.**

5 Q. But on the other hand, a different, separate  
6 part of the City's proposal is that we're going  
7 to place a cap on recharge credits of 120,000  
8 acre-feet, that's a different part of the  
9 proposal, right?

10 **A. Accumulated 120,000.**

11 Q. And the answer to that is correct?

12 **A. Correct.**

13 Q. And so what we're talking about is just this  
14 120,000 acre-foot cap. I'm not talking about  
15 what -- what the City did in their drought  
16 modeling right now, I'm just talking about this  
17 cap at this point. If we have a cap --

18 **MR. MCLEOD:** I'm -- I'm going to  
19 object on relevance, and the reason that I  
20 do is there is no cap currently, and  
21 currently the City can draw the 1900 --  
22 excuse me, the 19,000 acre-feet annually  
23 with no cap. So -- so what's the point of  
24 the question? I don't see the point.

25 **PRESIDING OFFICER:** Well, I think

1 Q. And I spelled out that we were withdrawing that  
2 19,000 acre-feet a year, did you understand that  
3 was the nature of my question, Mr. Letourneau?

4 **A. Yes, that's the nature of the question, but then**  
5 **that's not the proposal. I mean, we -- we lined**  
6 **up the withdrawal of the recharge credit based**  
7 **on the City's drought monitoring in the**  
8 **proposal, and so I think it was -- I can't**  
9 **remember exactly, it's roughly 50,000 acre-feet**  
10 **over eight years. And the 120 came from the**  
11 **USGS model space in the aquifer, then the 120 --**  
12 **yeah, the 50,000 acre-feet of recharge credits,**  
13 **that was justified with back-to-back one-year**  
14 **droughts. And so if -- we don't have -- that's**  
15 **the proposal in front of us. But if we had a**  
16 **proposal in front of us that said, look, we got**  
17 **120,000 acre-feet of recharge credits and we**  
18 **want to pump 19,000 acre-feet per year, then,**  
19 **yes, that would have an impact on the aquifer.**

20 Q. I'm going to draw a distinction and we can -- we  
21 can go and read pages from the proposal to help  
22 to clarify this distinction, but I think we're  
23 talking about two different things. On one  
24 hand, we have the City's drought modeling where  
25 they say, we're going to actually need somewhere

1 it's part of the proposal, and maybe it's  
2 a -- maybe it's more of a protection for  
3 the public interest, maybe it's not, and I  
4 think it's important to explore the  
5 different possibilities that could arise  
6 under this proposal. So I'll let it go  
7 ahead.

8 **MR. STUCKY:** Thank you.

9 **BY MR. STUCKY:**

10 Q. So this 120,000 acre-feet cap, you told me a  
11 moment ago that although the City is saying that  
12 we'll need about 50,000 or north of 50,000  
13 acre-feet of water during our modeled eight-year  
14 drought, you told me a moment ago that these  
15 credits can be withdrawn both in the time of a  
16 drought and at other times as well; is that  
17 right?

18 **A. That's correct.**

19 Q. So in other words, as the City is using -- if  
20 the City accumulates 120,000 acre-feet of  
21 credits, this water can be withdrawn, then, at  
22 any time subject to 19,000 acre-feet a year?

23 **A. That's correct.**

24 Q. So then that brings us back to our question,  
25 circle back to our question after this series of

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1 objections, if the City is to accumulate 120,000  
 2 acre-feet of credits, do you follow me so far?  
 3 **A. So far.**  
 4 Q. And the City were to withdraw those at a rate of  
 5 19,000 acre-feet per year, subject to  
 6 gradational losses, subject to those gradational  
 7 losses, is there the potential, over the course  
 8 of time, to take 120,000 acre-feet of water out  
 9 of the aquifer?  
 10 **A. Yes.**  
 11 Q. So at least if 120,000 acre-feet of water was  
 12 taken over the course of time, whether it's in a  
 13 time of drought or a different time, there's the  
 14 chance of depleting the aquifer to the tune of  
 15 120,000 acre-feet over the course of time; is  
 16 that true?  
 17 **A. Over the course of time. And at one time, it**  
 18 **was there in 1993.**  
 19 Q. Let me ask you about this 120,000 acre-foot cap.  
 20 Just a moment ago, you said to me, well, the  
 21 City actually only needs just north of 50,000  
 22 acre-feet during the time of a drought. Do you  
 23 recall saying that a moment ago?  
 24 **A. Yes, that -- of the modeled 1 percent eight-year**  
 25 **drought.**

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1 Q. If that's all the City needs during an  
 2 eight-year modeled drought, do you believe the  
 3 cap should be closer to 50 or 60,000 acre-feet,  
 4 if that's all they need?  
 5 **A. Well, there's not a cap now, so it's like --**  
 6 **there's not a cap now, the 120 was the space in**  
 7 **the aquifer, so that's why we felt the 120 was**  
 8 **reasonable. But then the recharge credits don't**  
 9 **renew, and so we don't know if we're going to**  
 10 **have a 1 percent drought back to back or if**  
 11 **they're going to be 100 years apart. And so we**  
 12 **felt it justified to have 120, or whatever**  
 13 **the -- you know, we were fine with the 120**  
 14 **because there's no cap right now.**  
 15 Q. Well, I want to clarify one thing you said a  
 16 moment ago. You said the recharge credits,  
 17 quote, don't renew, end quote.  
 18 **A. That's correct.**  
 19 Q. If the City were to accumulate 120,000  
 20 acre-foot -- feet of credits and they withdraw  
 21 in the year 19,000 acre-feet of credits and that  
 22 pulls the number down to 101,000 of acre-feet of  
 23 credits, do you follow?  
 24 **A. Uh-huh, yes.**  
 25 Q. But the City then at that point decided to

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1 either inject water into the aquifer or  
 2 accumulate credits through the aquifer  
 3 maintenance credits, the City could get back to  
 4 120,000 acre-feet of credits, correct?  
 5 **A. That's correct.**  
 6 Q. So going back to my question, the 120,000  
 7 acre-feet of credits, is that essentially, then,  
 8 based on your testimony, planning for the  
 9 possibility of two back-to-back 1 percent  
 10 droughts?  
 11 **A. Correct. I mean, that's how the Division of**  
 12 **Water Resources looked at it.**  
 13 Q. But if we were to model a 1 percent drought and  
 14 we discovered, as the City modeled, that they  
 15 only need 50,000 acre-feet of credits and we're  
 16 doubling that, would that be closer to 100,000  
 17 acre-feet of credits?  
 18 **A. Double -- doubling 50 is 100.**  
 19 Q. So my question is if we're trying to base this  
 20 on allowing the City to plan for two  
 21 back-to-back 1 percent droughts, is a cap of  
 22 100,000 acre-feet more appropriate?  
 23 **A. It could be, yes.**  
 24 Q. And if, in fact, the City -- in the City's  
 25 proposal they were only asking for consideration

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1 of planning for one 1 percent drought, would you  
 2 agree, then, that if we're just planning for one  
 3 eight-year drought, 50,000 of credits is all  
 4 they would need; is that right?  
 5 **A. According to this proposal, yes.**  
 6 Q. And so if we were just planning for one major  
 7 drought, would you believe that a reasonable cap  
 8 would then be closer to 50,000 acre-feet?  
 9 **A. Well, I don't -- you know, I don't know if a**  
 10 **cap's even necessary in the first place. I**  
 11 **mean, it's part -- it's part of their proposal.**  
 12 **We didn't require a cap in Phase I or Phase II,**  
 13 **but, I mean, if -- if you want to say that we're**  
 14 **going to require a cap and what would be**  
 15 **appropriate, then, yes, whatever's in this**  
 16 **proposal.**  
 17 Q. Do you know at what rate the City has  
 18 accumulated ASR Phase II recharge credits?  
 19 **A. No. I mean, I know that it's been slow. I**  
 20 **think they've got about 6,000 roughly now. But**  
 21 **I'm not -- but I'm not quite sure.**  
 22 Q. Based on the gradational losses that ASR Phase  
 23 II credits are subject to and also the  
 24 gradational losses that were testified to by  
 25 Mr. McCormick, is it possible for the City to

1 accumulate 120,000 acre-foot of credits based  
2 solely on ASA -- ASR Phase II credits alone?  
3 **A. Not with the losses. I mean, you might -- you**  
4 **might max out in a year, but then the losses**  
5 **that -- I mean, the cells leak so ...**  
6 Q. So in other words, the only way that the City  
7 could conceivably get to 120,000 acre-feet of  
8 credits is through this aquifer maintenance  
9 credit proposal. Is that a true statement?  
10 **A. Yes, but then they leak also. They -- they've**  
11 **proposed to have some of those recharge credits**  
12 **go away also.**  
13 Q. Would you agree with me that at the point when  
14 these 120,000 acre-feet of credit are withdrawn  
15 over a course of years at a rate of 19,000  
16 acre-feet a year, would you agree that at least  
17 at that point, there's the potential to cause  
18 impairment to existing wells in the basin  
19 storage area?  
20 **A. Could be but then we've got the condition --**  
21 **we're going to have the condition that if water**  
22 **rights are impacted, not even impaired but**  
23 **impacted, that the City will make them whole.**  
24 Q. Would you also agree with me that at the point  
25 these 120,000 acre-feet of credits are withdrawn

1 domestic wells or other wells are impaired we'd  
2 have a condition in place that the City would  
3 have to do something about that; is that right?  
4 **A. Correct.**  
5 Q. What would the City have to do?  
6 **A. I think it says to make them whole, however they**  
7 **do it, whether they drill them a well, provide**  
8 **them water, something to make them whole.**  
9 Q. Let me ask you this: When we visited last time,  
10 at least in one of the index cells, you told me  
11 that under the City's proposal, the practical  
12 saturated thickness could be closer to 19 or  
13 21 feet, at least in one of those index cells,  
14 based on the monitoring -- City's monitoring  
15 well we discussed. Do you recall that  
16 discussion?  
17 **A. Correct, yes.**  
18 Q. Under that scenario, if -- if we have a  
19 situation where water just isn't available, is  
20 it possible that some wells could dry up and  
21 they couldn't be made whole, pursuant to the  
22 City withdrawing all this water?  
23 **A. Well, yes, I mean, very worst-case scenario but,**  
24 **first of all, the space in the aquifer has**  
25 **already been there at one point in time and**

1 over time, there's the potential to adversely  
2 impact water quality either in the sense of the  
3 migration of the Burrton chloride plume or  
4 otherwise?  
5 **A. It could happen, but, again, those protections**  
6 **are there, and we did not see those types of**  
7 **problems in 1993.**  
8 Q. Would you also agree with me that at the point  
9 this 120,000 acre-feet of credits is withdrawn  
10 over time there would be the potential for  
11 minimum desirable streamflow to be affected?  
12 **A. Yes.**  
13 Q. And if we define public interest in the context  
14 of other irrigation users in the basin storage  
15 area, would you agree with me that at least as  
16 public interest relates to those other users,  
17 this withdrawing 120,000 acre-feet of credits  
18 may not be in the public interest at that point?  
19 **A. Yeah, I -- you know, I didn't see the impact in**  
20 **1993, but if there was an impact, then it would**  
21 **not be in the public interest.**  
22 Q. Just a moment ago on impairment, you mentioned  
23 that, well, if the City is to withdraw 120,000  
24 acre-feet of credits at a rate of 19,000  
25 acre-feet a year over a course of time and if

1 **people weren't impacted then, and the City has**  
2 **the ability to rotate their pumping around.**  
3 **I -- I don't know of a scenario where in this**  
4 **particular Equus Beds well field that the City's**  
5 **going to dry it up. I mean, there's a million,**  
6 **2 million acre-feet of storage, we're talking**  
7 **about 120,000 acre-feet of space in the top of**  
8 **it. Very worst-case situation, yes, but I don't**  
9 **see the City coming in here and operating the**  
10 **well field in such a way that it damages it.**  
11 **Pragmatic approach.**  
12 Q. So what you're doing here, and the City talked  
13 about their results-based form of management, we  
14 talked about that concept in the first days of  
15 this hearing; is that right?  
16 **A. Yes.**  
17 Q. That the City has transitioned to this  
18 results-based form of management, do you recall  
19 that discussion from the very first days of this  
20 hearing?  
21 **A. Yes.**  
22 Q. So what you're saying here is because the City  
23 has transitioned to this results-based form of  
24 management, you're trusting the City, then, to  
25 manage the aquifer in a way that's beneficial to

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1 all users, is that what you're saying?  
 2 **A. Yes.**  
 3 Q. Would you at least agree with me, though, that  
 4 in this proposal there's nothing that obligates  
 5 the City to manage the aquifer in that way?  
 6 **A. Yeah, but I -- whether it's the City of Wichita**  
 7 **or even the City of Hays and what they're doing,**  
 8 **I don't see a city investing a lot of money into**  
 9 **a system and then going in and messing it all**  
 10 **up.**  
 11 Q. So here's my question: Are there permit  
 12 conditions that we could put into place that  
 13 would ensure that the City withdraws these  
 14 credits and manages the aquifer in a way that's  
 15 beneficial to all users, are there permit  
 16 conditions one could put in place to that  
 17 effect?  
 18 **A. Yes, we could figure those out, definitely.**  
 19 **Starting out with the aquifer full is very good**  
 20 **for everybody.**  
 21 Q. So do you believe those are permit conditions  
 22 that the Division of Water Resources should  
 23 discuss and should, in fact, be adopted by  
 24 Ms. Owen in this case?  
 25 **A. Well, ultimately, the chief engineer, I mean --**

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1 **it's something to discuss, definitely.**  
 2 Q. As you're sitting here today, and I think you  
 3 were looking to a colleague a moment ago, as  
 4 you're sitting here today, are you aware of what  
 5 some of those potential permit conditions could  
 6 be other than ensuring that any effect to other  
 7 existing wells would be corrected?  
 8 **A. No, I -- I don't have any examples other than**  
 9 **the draft conditions that we have. But those**  
 10 **are draft conditions that could be tweaked.**  
 11 Q. So I think what you're saying here is maybe some  
 12 conditions should be put into the City's  
 13 proposal to ensure that the City is going to  
 14 manage the aquifer in a manner like they say  
 15 they will, conducive to all the users. Is that  
 16 what you're saying?  
 17 **A. Yeah, I mean, yeah, we could do -- I mean, it's**  
 18 **in their proposal, the junior water right**  
 19 **holders are protected by law, but if we want to**  
 20 **make it more specific, we can.**  
 21 Q. And would you agree with me that to the extent  
 22 that can be done, that would probably be  
 23 something beneficial?  
 24 **A. I mean, if it puts people at ease, yeah. As**  
 25 **long as they're reasonable, I mean, it needs to**

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1 **be something that we would do to any other water**  
 2 **user in the state.**  
 3 Q. All right. I'd like to go ahead and shift gears  
 4 with you for a moment, Mr. Letourneau.  
 5 **PRESIDING OFFICER:** If I can  
 6 interrupt, if you're going to start a new  
 7 line of questioning, it's about 10:20,  
 8 might be a good time for a break. Would  
 9 that disrupt you too much?  
 10 **MR. STUCKY:** No.  
 11 **PRESIDING OFFICER:** Okay. Let's  
 12 take about a ten-minute break. Thanks.  
 13 (Thereupon, a recess was taken;  
 14 whereupon, the following was had.)  
 15 **PRESIDING OFFICER:** Okay. We're now  
 16 back on record and, Mr. Stucky.  
 17 **MR. STUCKY:** Thank you.  
 18 **BY MR. STUCKY:**  
 19 Q. Mr. Letourneau, did the City first bring the  
 20 concept of aquifer maintenance credits to the  
 21 Division of Water Resources' attention back in  
 22 2014?  
 23 **A. It -- it could be. I mean, at sometime they**  
 24 **brought them to us, but I don't remember the**  
 25 **year.**

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1 Q. I would ask that you locate the black notebook,  
 2 which I think is already in front of you, the  
 3 City's notebook.  
 4 **A. Yes.**  
 5 Q. And there is a tab, a white tab and it's called  
 6 proposal correspondence in that notebook. And  
 7 if you would, it's numbered as page 16 in that  
 8 proposal correspondence. Would you agree with  
 9 me that these are meeting notes from November 17  
 10 of 2014, and it appears to be a meeting between  
 11 members of the Division of Water Resources and  
 12 members of the City; is that right?  
 13 **A. Yes, that's correct.**  
 14 Q. And at that point, it appears that -- and it  
 15 says these notes were prepared by Brian Meier,  
 16 who is, in fact, in the room; is that right?  
 17 **A. That's correct.**  
 18 Q. And so -- and, of course, Mr. Meier can testify  
 19 to it, but would you agree that these notes  
 20 would accurately reflect what was discussed  
 21 during this meeting?  
 22 **A. Yes.**  
 23 Q. Now, I would like for you to turn now to page 19  
 24 of these -- in the black notebook. At the  
 25 bottom of that page, there's a number 4, and it

1 says, water supply operations strategy and  
2 operational credits. And then it says in  
3 subsection (b), ASR conjunctive use credits.  
4 And it talks about this concept of high water  
5 levels from reduced pumping, and it basically  
6 just outlines the City's aquifer maintenance  
7 credit proposal in the next lines; is that  
8 correct?  
9 **A. That's correct.**  
10 Q. So at that point, was it being called -- just so  
11 I'm clear on the terminology here, at that  
12 point, was it being called an ASR conjunctive  
13 use credit?  
14 **A. Well, that's what this was titled, I mean, at**  
15 **the time we didn't know what -- what we were**  
16 **going to call them.**  
17 Q. But at least, and I see the terminology of  
18 conjunctive use credits, and I could highlight  
19 how many times it's in this document, but at  
20 that point, at least, the Division of Water  
21 Resources, so I'm clear on my terminology, was  
22 calling an aquifer maintenance credit a  
23 conjunctive use credit; is that right?  
24 **A. Well, we weren't -- I mean, that's the**  
25 **terminology that was being discussed, we weren't**

1 meeting, is that right --  
2 **A. That's correct.**  
3 Q. -- you were shown to be at this meeting?  
4 **A. Correct.**  
5 Q. So at least as early as 2014, this concept of  
6 aquifer maintenance credits was being discussed  
7 with the City; is that right?  
8 **A. Yes.**  
9 Q. Can you tell me who from the Groundwater  
10 Management District No. 2 was present at this  
11 meeting?  
12 **A. There was no one there from GMD2.**  
13 Q. Do you know if GMD2 was invited to this meeting?  
14 **A. I don't know.**  
15 Q. When do you think GMD2 first became aware -- do  
16 you know when GMD2 first became aware of the  
17 City's proposal with respect to AMC credits?  
18 **A. No, I don't know.**  
19 Q. Moving back to the regulation change with  
20 respect to K.A.R. 5-12-1(b)(2), what was the  
21 reason for wanting to propose a regulation  
22 change with -- with respect to how the bottoms  
23 would be defined?  
24 **A. Well, I believe we learned a lot at the end of**  
25 **2011 and 2012 and where the levels were and --**

1 **really calling it anything at the time.**  
2 Q. Well, any reference to conjunctive use credits  
3 in these meeting minutes, that would be the same  
4 as a reference to an aquifer maintenance credit;  
5 is that right?  
6 **A. That's correct.**  
7 Q. Is the concept of conjunctive use credits found  
8 anywhere in statute or regulation?  
9 **A. Not in Kansas. I don't know about other states.**  
10 Q. I'd like you to turn back to page 17 in this  
11 proposal correspondence. During this meeting,  
12 it appears to me that there was also a  
13 discussion as shown in number 2, subsection (c),  
14 little (iii) on page 17, there was a discussion  
15 about proposing a regulation change to K.A.R.  
16 5-12-1(b)(2); is that true?  
17 **A. That's true.**  
18 Q. And that regulation, in fact, provides  
19 specific -- specifics on how the bottom of the  
20 basin storage area is to be calculated for ASR  
21 permitting; is that right?  
22 **A. That's correct.**  
23 Q. And, in fact, I read from this notebook. Back  
24 in -- and would you also agree with me, and it's  
25 shown on the prior page, but you were at this

1 **in the aquifer, and like I'd stated earlier**  
2 **about Dale Goter from the City approaching me in**  
3 **the Capitol about the potential of stranding any**  
4 **recharge credits that were accumulated. But**  
5 **then just the timing of this also, we were**  
6 **talking to Dairy Farmers of America in Garden**  
7 **City when they were under construction and**  
8 **coming -- they were going to have a lot of water**  
9 **available after they did the milk processing,**  
10 **and so there was the potential, and it has --**  
11 **nothing has happened of that yet other than the**  
12 **talk of potentially recharge -- doing an aquifer**  
13 **recharge project near DFA, Dairy Farmers of**  
14 **America, plus also there was this, so there**  
15 **was -- there were two discussions happening**  
16 **about lowering -- changing the definition of the**  
17 **minimum index level.**  
18 Q. And so it was this concept of changing how the  
19 minimum index level was defined, those  
20 discussions were occurring as early as 2014; is  
21 that right?  
22 **A. That's correct.**  
23 Q. Were those discussions occurring prior to your  
24 knowledge?  
25 **A. Well, you know, there -- we were -- I would see,**



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1 like, Joe Pajor at a water authority meeting or  
 2 something like that and he would discuss them  
 3 with me. But I don't know the exact dates.  
 4 Q. But as far as an official meeting, are you aware  
 5 of a prior official meeting where there is a  
 6 bunch of members from the City and a bunch of  
 7 members from the Division of Water Resources  
 8 present?  
 9 **A. No, not that I'm aware of.**  
 10 Q. So at that point, you were discussing a proposed  
 11 change to that particular regulation, and --  
 12 with the regulation being K.A.R. 5-12-1(b)(2);  
 13 is that right?  
 14 **A. That's correct.**  
 15 Q. Is it true that that regulation and how an index  
 16 level was defined, is it true that that  
 17 regulation was, in fact, changed?  
 18 **A. It was changed, yes.**  
 19 Q. Do you know the year that regulation was  
 20 changed?  
 21 **A. I could look it up, but I'm not quite sure.**  
 22 Q. I'd ask that you turn in your exhibit notebook,  
 23 it would be Volume Number II, Exhibit 22,  
 24 page 5.  
 25 **A. Okay, I'm there.**

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1 Q. And I misspoke, there's two different places I  
 2 want to visit about. But it's on page 127 it's  
 3 labeled at the bottom, K.A.R. 5-12-1.  
 4 **MR. STUCKY:** May I approach the  
 5 witness?  
 6 **PRESIDING OFFICER:** Yes.  
 7 **BY MR. STUCKY:**  
 8 Q. Did you find it?  
 9 **A. Yeah, I just -- I only had one hand because of**  
 10 **the microphone.**  
 11 Q. Here we find K.A.R. 5-12-1, and if you turn to  
 12 the last page of this regulation, it says, as  
 13 amended on April 29, 2016. So would you agree  
 14 with me that it was amended in 2016?  
 15 **A. Yes.**  
 16 Q. And, in fact, that amendment was the same  
 17 amendment that was being discussed with the City  
 18 as early as 2014; is that right?  
 19 **A. That's correct.**  
 20 Q. So I want to make sure I'm clear what this  
 21 change was as it relates to the City's proposal.  
 22 Prior to 2016, would you agree with me that the  
 23 basin -- the bottom of the basin storage area  
 24 was defined as the lowest water level that  
 25 occurred in the basin storage area within ten

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1 years of filing an ASR application or a longer  
 2 period of time, if needed? Does that sound  
 3 right?  
 4 **A. That sounds right.**  
 5 Q. And would you agree that through this regulation  
 6 change, it was essentially redefined as 20 feet  
 7 above bedrock or an alternatively proposed  
 8 level? Is that essentially what happened?  
 9 **A. Yes.**  
 10 Q. As it relates to your discussions with the City  
 11 and also as it relates to your interpretation of  
 12 this regulation, what does an alternatively  
 13 proposed level mean?  
 14 **MR. OLEEN:** May I ask for  
 15 clarification, Mr. Stucky, where you're  
 16 getting that phrase again, please.  
 17 **MR. STUCKY:** Sure. Let's turn to  
 18 K.A.R. 5-1 -- well, can I go off the record  
 19 just for a minute?  
 20 **PRESIDING OFFICER:** That's fine.  
 21 (Discussion held off the record.)  
 22 **BY MR. STUCKY:**  
 23 Q. If you could turn to K.A.R. 5-1-1(uu).  
 24 **PRESIDING OFFICER:** Are we back on?  
 25 **MR. STUCKY:** Yeah, back on the

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1 record.  
 2 **BY MR. STUCKY:**  
 3 Q. There we go. And it's on page 5.  
 4 **A. Okay.**  
 5 Q. (uu), it states, minimum index level means  
 6 20 feet above the bedrock elevation or an  
 7 alternatively proposed minimum elevation for  
 8 storage within a basin storage area or, if the  
 9 basin storage area is subdivided, a smaller  
 10 subdivided area. Would you agree that I read  
 11 the current definition correctly?  
 12 **A. Yes.**  
 13 Q. So my question is what does alternatively  
 14 proposed minimum elevation mean as used in this  
 15 context?  
 16 **A. Well, minimum index level means 20 feet above**  
 17 **bedrock or an alternatively proposed minimum**  
 18 **elevation for storage, I mean, it's -- it can be**  
 19 **something different than 20 feet.**  
 20 Q. Okay. And how -- how is this alternatively  
 21 proposed level defined? In other words, how  
 22 does the Division of Water Resources determine  
 23 if an alternatively proposed minimum index level  
 24 is reasonable, how is that -- how would you make  
 25 that determination?

1 **A. Well, I'm sure our modelers would look at it to**  
2 **make sure it didn't cause an impact.**  
3 Q. Well, I guess my question is is there any type  
4 of other definitions or other regulations to  
5 look to to try and determine if -- what defines  
6 an alternatively proposed minimum index level?  
7 **A. No.**  
8 Q. So similar to -- so basically you would know it  
9 when you see it; is that right?  
10 **A. Yeah, I think that's a good way of putting it, I**  
11 **mean, if -- here comes a different proposed**  
12 **level, if it -- if it appears reasonable, then**  
13 **we would consider it reasonable.**  
14 Q. So the City of Wichita proposed this regulation  
15 change; is that right?  
16 **A. Well, I mean, they asked us to do it, they**  
17 **didn't propose it; they felt like they needed to**  
18 **do it. But then again too, we had the other --**  
19 **the other aquifer storage and recovery**  
20 **potentially looming in southwest Kansas.**  
21 Q. So when this regulation change occurred, the  
22 City of Wichita saw it as beneficial to them to  
23 redefine how a minimum index level would be  
24 constructed; is that right?  
25 **A. Yes, they felt it appropriate that they move the**

1 **bottom so they didn't strand recharge credits.**  
2 Q. I think you said that there's another ASR  
3 project being considered in southwest Kansas, is  
4 that what you said?  
5 **A. I don't know if it still is. It was when Dairy**  
6 **Farmers of America was being constructed.**  
7 Q. As you're sitting here today, are there any  
8 other pending permits or existing permits with  
9 respect to an ASR recharge facility in the State  
10 of Kansas other than the City of Wichita?  
11 **A. No.**  
12 Q. At the time when this regulation change was  
13 sought, were there any other ASR recharge  
14 permits being requested elsewhere in the state?  
15 **A. No.**  
16 Q. And so this concept with the dairy farmers or  
17 the dairy association, that was just in concept;  
18 is that -- is that right?  
19 **A. That was in concept, but it would not have**  
20 **worked under the current rules.**  
21 Q. Did anyone besides the City testify in support  
22 of this regulation change? Do you know when  
23 this regulation was changed?  
24 **A. I attended the hearing and, no, not -- not that**  
25 **I'm aware of. I don't recall anybody other than**

1 **the City.**  
2 Q. Did anyone testify in opposition to this  
3 regulation being changed?  
4 **A. They did, there was a lot of misunderstanding**  
5 **and there was -- there was -- there was**  
6 **opposition.**  
7 Q. Did the GMD2, the District, did they testify in  
8 opposition to the regulation change?  
9 **A. If I recall correctly, yes.**  
10 Q. Do you recall who the other parties were that  
11 testified in opposition?  
12 **A. You know, I want to say like Harvey County Farm**  
13 **Bureau and things, but, again, there was a lot**  
14 **of misunderstanding. This is a statewide rule,**  
15 **and folks felt that this was a local rule. But**  
16 **it did affect folks locally, but it was -- there**  
17 **was a lot of misunderstanding at the time.**  
18 Q. So I think you answered another question I had,  
19 this is a statewide regulation, then?  
20 **A. That's correct.**  
21 Q. And despite that opposition, I think it suffices  
22 to say that the chief engineer approved of that  
23 regulation change at that time; is that right?  
24 **A. That's correct.**  
25 Q. At the time that this regulation change was

1 made, was there any discussion of individual  
2 well log data at that time?  
3 **A. Not that I -- not that I recall.**  
4 Q. Previously, you -- you indicated in your  
5 deposition, I believe, that it's your opinion  
6 that the City's proposal complies with current  
7 regulations and statutes; is that -- is that  
8 right?  
9 **A. That's correct.**  
10 Q. And, in fact, in your deposition, just for a  
11 clear record, that's in several different  
12 places, specifically on page 88, lines 19  
13 through 21, you talk about how the City -- I'm  
14 sorry, scratch that. You talk about how the  
15 Division of Water Resources had an official  
16 letter opining about how this proposal is legal  
17 and that you agreed with that letter. Would  
18 you -- would you agree that I'm accurately  
19 stating your testimony?  
20 **A. Yes.**  
21 Q. And so there was this letter from Chief Engineer  
22 Barfield, and he said, we've considered the  
23 statutes and regulations and we believe that  
24 aquifer maintenance credits are legal; is that  
25 right?

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1 **A. That's correct.**  
 2 Q. And, in fact, I believe you stated in your  
 3 deposition that you also looked at those  
 4 statutes and regulations to help determine the  
 5 lawfulness of aquifer maintenance credits; is  
 6 that right?  
 7 **A. That's correct.**  
 8 Q. I think this question is already answered, but  
 9 I'm going to go ahead and ask it anyway, is it  
 10 still your position that aquifer maintenance  
 11 credits are legal?  
 12 **A. Yes.**  
 13 Q. And the reason for that is you believe that  
 14 aquifer maintenance credits are consistent with  
 15 ASR regulations; is that right?  
 16 **A. That's correct.**  
 17 Q. I'd ask that you turn to Exhibit 22 in our  
 18 notebook in front of you, it's Volume II.  
 19 Actually, I guess that's already open, should be  
 20 open.  
 21 **A. Uh-huh.**  
 22 Q. If you could turn with me to K.A.R. 5-12-1(a),  
 23 and it's found on pages 127 through 128 of these  
 24 regulations. Let me know when you're on those  
 25 pages.

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1 **A. I'm there, 5-12-1.**  
 2 Q. Is K.A.R. 5-12-1 essentially the overarching  
 3 regulation or the basis, the fundamental  
 4 regulation that allows for aquifer storage and  
 5 recovery?  
 6 **A. Yes.**  
 7 Q. And, in fact, if you were trying to define or  
 8 look under what circumstances a recharge  
 9 proposal is legal, is this the regulation you  
 10 would look to?  
 11 **MR. OLEEN:** Objection, I think we're  
 12 kind of getting close to asking for legal  
 13 opinion.  
 14 **MR. STUCKY:** May I speak to that?  
 15 **PRESIDING OFFICER:** Yes.  
 16 **MR. STUCKY:** In his deposition,  
 17 which you've already ruled it can be  
 18 considered part of his official -- his  
 19 official expert report --  
 20 **PRESIDING OFFICER:** Uh-huh.  
 21 **MR. STUCKY:** -- in his deposition,  
 22 and I can go through chapter and verse,  
 23 page by page all the places it was  
 24 discussed how these regulations apply --  
 25 first of all, throughout his deposition, he

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1 discusses how these regulations apply  
 2 throughout the deposition, number one.  
 3 Number two, he also stated in prior  
 4 testimony and in his deposition that he  
 5 applies these regulations and statutes to  
 6 his everyday work. And, number three, he's  
 7 rendering an opinion on the legality of the  
 8 City's proposal. So it's well within the  
 9 province of this witness's testimony.  
 10 **MR. OLEEN:** I believe his opinion  
 11 was -- in the official written testimony  
 12 that Mr. Letourneau submitted on behalf of  
 13 DWR, he referenced a letter that the chief  
 14 engineer had drafted and issued in  
 15 conjunction with consultation with legal  
 16 counsel. I understand that there might be  
 17 kind of a gray area here in that we have  
 18 officials in the world of water who apply  
 19 these laws, and so they do have some  
 20 familiarity with them, but I'm aware of the  
 21 legal arguments that GMD and Intervenors  
 22 wish to make in certain ways and they've  
 23 made -- I believe they made those arguments  
 24 in their motion to dismiss and motion for  
 25 summary judgment. And I would just ask

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1 Madam Hearing Officer to keep legal  
 2 arguments for lawyer-written briefs at the  
 3 end of these proceedings.  
 4 Mr. Letourneau has been on this hot  
 5 seat, I think the longest witness at this  
 6 point, and, you know, he's certainly  
 7 subject to questioning by virtue of his  
 8 position with the DWR and the opinions that  
 9 he has submitted as his written testimony,  
 10 but he's not an attorney, he's not here  
 11 with assistance of counsel to go through  
 12 analysis and interpretation in great detail  
 13 of these regs and statutes, even though  
 14 that's part of what he does in his job.  
 15 But when he does it in his job, he has  
 16 someone like me or he has someone like  
 17 Ms. Murray or he has someone else with whom  
 18 he can consult, and he doesn't have that as  
 19 he's sitting there in the chair.  
 20 **MR. STUCKY:** And then part of my  
 21 response to that is, you know, we have this  
 22 official letter that's being advocated that  
 23 also outlines the legality of this  
 24 proposal, he applies regulations to his  
 25 everyday job, and I think it's prejudicial

1 to the District and to other parties for  
2 there to be an official position as far as  
3 what these legalities are and introduce  
4 these letters and not allow us to ask  
5 questions with respect to what's already  
6 been adopted in deposition testimony,  
7 through the letter of the chief engineer  
8 and otherwise. And, again, he's testified  
9 over and over again that he understands  
10 these regulations, he's applied them in his  
11 everyday job, I think asking some basic  
12 questions about them is fair.

13 **PRESIDING OFFICER:** I understand  
14 both arguments, I think what -- I think  
15 what we should do with this, it is a rather  
16 unique situation, but I do think it's  
17 appropriate to ask along the lines of in  
18 his official duties did he look at these  
19 and how did he apply them, rather than an  
20 overall opinion about what is or isn't  
21 legal, because then we're limiting it to  
22 what did he personally do in relation to  
23 this proposal. Can we go forward with  
24 that?

25 **MR. STUCKY:** Yes, we can.

1 **MR. OLEEN:** -- I mean, I think I'm  
2 right in saying that titles of statutes and  
3 regulations have no legal significance.  
4 **PRESIDING OFFICER:** Can you try to  
5 rephrase, and, again, I think it's more  
6 along the lines of exactly what did he do  
7 in the process of any evaluation he did or  
8 involvement he had with this proposal and  
9 evaluating it and did he view these and  
10 what were his conclusions and how they  
11 relate to the proposal?

12 **BY MR. STUCKY:**

13 Q. Let's go to the heart of the language in this  
14 regulation and how you applied it. It says, an  
15 operator may store water in an aquifer storage  
16 and recovery system under a permit to  
17 appropriate water for artificial recharge if the  
18 water appropriated is source water. With  
19 respect to an aquifer maintenance credit, where  
20 does the aquifer storage occur?

21 **A. In the basin storage area.**

22 Q. And how does the storage occur?

23 **A. By the accounting method, the -- the gallon is**  
24 **taken to town, but then the gallon is accounted**  
25 **for in the basin storage area.**

1 **PRESIDING OFFICER:** Mr. Oleen?

2 **MR. OLEEN:** Yes.

3 **MR. STUCKY:** I can ask all my  
4 questions in that context.

5 **BY MR. STUCKY:**

6 Q. So K.A.R. 5-12-1, you indicated, I think a  
7 minute ago, and I might have lost my train of  
8 thought, but I think you said that you would  
9 have looked at that regulation as you applied it  
10 to the City's aquifer maintenance credit  
11 proposal; is that right?

12 **A. That's correct. That's correct, sorry.**

13 Q. As you applied this regulation to the City's  
14 aquifer maintenance credit proposal, I assume  
15 that you would have looked at the title of this  
16 regulation; is that right?

17 **A. Correct.**

18 Q. As you applied it to the City's aquifer  
19 maintenance credit proposal, what did you  
20 consider storage to mean in that title?

21 **MR. OLEEN:** May I respectfully  
22 object on relevance because, again, this  
23 kind of gets into statutory and regulatory  
24 construction and --

25 **PRESIDING OFFICER:** Uh-huh.

1 Q. As it's used in the context of this regulation,  
2 how did you -- with an aquifer maintenance  
3 credit, where is the recovery system, how does  
4 that apply?

5 **A. It's a recharge credit, so any recovery system**  
6 **that's there to recover a recharge credit, it's**  
7 **the same if it's aquifer maintenance credit or a**  
8 **physical recharge credit.**

9 Q. Where does -- with respect to an aquifer  
10 maintenance credit, how does artificial recharge  
11 occur as it's defined in this regulation, or  
12 it's used in this regulation?

13 **A. Well, if you go to the definition of recharge**  
14 **credit -- they have to tie together, and so let**  
15 **me get back to recharge credit.**

16 Q. And for the record, is that found in K.A.R.  
17 5-22-1(c)?

18 **A. When I get there, yeah, I'll tell you. So**  
19 **recharge credit is defined in K.A.R. 5-1-1 and**  
20 **then (mmm). A recharge credit means the**  
21 **quantity of water that is stored in the basin**  
22 **storage area that is available for subsequent**  
23 **appropriation for beneficial use by the operator**  
24 **of the aquifer storage and recovery system. And**  
25 **so when our attorneys looked at it, they just**

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1 **felt whether it's a physical recharge credit or**  
 2 **an aquifer maintenance credit, it's a recharge**  
 3 **credit. And so any recovery that is laid out in**  
 4 **K.A.R. 5-12-1, it's for a recharge credit.**  
 5 Q. As it's used in 5 -- in that regulation you just  
 6 defined, what is the -- how did you apply the  
 7 term subsequent in that definition?  
 8 **A. Well, David, we -- the ASR was already there,**  
 9 **and we didn't go in and pick this proposal apart**  
 10 **word by word. And so this was a modification to**  
 11 **an already approved aquifer storage and**  
 12 **recovery. So we -- we didn't pick apart the**  
 13 **word storage, and we didn't pick apart the word**  
 14 **subsequent and things. This was a recharge**  
 15 **credit that's already laid out into the rules**  
 16 **that we felt, and so this is another form of a**  
 17 **recharge credit, and so that -- that's how we**  
 18 **applied it, if that makes sense.**  
 19 Q. I think so. So as we go back to K.A.R. 5-12-1,  
 20 it says that it's going to be artificial  
 21 recharge if the water appropriated is source  
 22 water. And so I'm clear, with respect to an  
 23 aquifer maintenance credit, there's no source  
 24 water actually injected, physically injected  
 25 into the aquifer itself; is that right?

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1 **A. That's correct.**  
 2 Q. And so at least as it relates to these  
 3 regulations, there is no source water that's  
 4 subsequently taken back out of the aquifer with  
 5 respect to an aquifer maintenance credit; is  
 6 that right?  
 7 **A. That's correct, I believe so.**  
 8 **MR. OLEEN:** I -- I object because I  
 9 think this is, again, getting too close to  
 10 legal conclusions, and I wish opposing  
 11 counsel would make their legal arguments in  
 12 a legal brief.  
 13 **PRESIDING OFFICER:** Okay. Yeah,  
 14 let's move -- let's -- I'm not comfortable  
 15 with that question either so ...  
 16 **BY MR. STUCKY:**  
 17 Q. With respect to the definition of a recharge  
 18 credit, would you agree with me that a recharge  
 19 credit is defined in K.A.R. 5-22-1(ee) and also  
 20 in K.A.R. 5-1-1(mmm) in the context of water  
 21 actually put into the aquifer, would you agree  
 22 that that's how it's defined?  
 23 **A. (mmm) just says -- (mmm) states, again, I'll**  
 24 **read it again, recharge credit means the**  
 25 **quantity of water that is stored in the basin**

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1 **storage area that's available for subsequent**  
 2 **appropriation for beneficial use by the operator**  
 3 **of the aquifer storage and recovery. And so for**  
 4 **the record, we -- we reviewed that recharge**  
 5 **credit definition to see if we needed to make a**  
 6 **modification to it, and we didn't feel it was**  
 7 **necessary because it didn't say water that was**  
 8 **injected in the aquifer. It was water that's**  
 9 **stored in the aquifer. And, David, you'd have**  
 10 **to tell me the other reference to look at.**  
 11 Q. The other one was K.A.R. 5-22-1(ee).  
 12 **A. That's a GMD regulation, where is that located?**  
 13 Q. That's in Number 24 in your notebook.  
 14 **A. Okay.**  
 15 Q. And (ee), in fact, uses the same definition.  
 16 **A. Okay.**  
 17 Q. It says, means the quantity of water that is  
 18 stored in the basin storage area and that is  
 19 available for subsequent appropriation for  
 20 beneficial use by the operator of the aquifer  
 21 storage and recovery. So --  
 22 **A. Okay.**  
 23 Q. -- in other words, as you're sitting here today,  
 24 you didn't conduct any kind of careful analysis  
 25 of what the term subsequent means or how that

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1 may apply to the City's proposal; is that right?  
 2 **A. No, but it -- to me, to answer that, available**  
 3 **for subsequent appropriation meaning we would**  
 4 **appropriate that with a different permit. I**  
 5 **believe that's what that means. And, you know,**  
 6 **for the record, we -- there's no definition of**  
 7 **AMCs, there's no definition of physical recharge**  
 8 **credit. We -- we gave a sincere review of that,**  
 9 **our legal staff did, and we don't mind changing**  
 10 **rules, we do that. And so we just didn't feel**  
 11 **it necessary to make a modification to our rules**  
 12 **based on this particular proposal.**  
 13 Q. Also in K.A.R. 5-22-1, in (c), there's a  
 14 definition of aquifer storage, is there not?  
 15 **A. Yes, there is.**  
 16 Q. And it says, it means the act of storing water  
 17 in the unsaturated portion of an aquifer by  
 18 artificial recharge for subsequent diversion and  
 19 beneficial use. Would you agree with that --  
 20 that I read it accurately?  
 21 **A. That's correct.**  
 22 Q. Did you construe for the purposes of defining  
 23 the legality of aquifer maintenance credits what  
 24 it means to -- what this act of storing water  
 25 means?

1 **A. No, I didn't construe anything.**  
2 Q. As -- if you were trying to determine what  
3 unsaturated portion of the aquifer meant, would  
4 that mean the portion of the aquifer where water  
5 doesn't exist?  
6 **A. Yes.**  
7 Q. And so in other words, the storage contemplates  
8 that water would be put in this unsaturated  
9 portion; is that right?  
10 **A. That's correct.**  
11 **MR. OLEEN:** Objection, I don't --  
12 I'm sorry, Mr. Stucky, objection, I -- I  
13 don't think the witness can testify to what  
14 the regulation contemplates. I think  
15 that's a legal conclusion.  
16 **MR. STUCKY:** I can ask him if that's  
17 how he interprets the regulation.  
18 **PRESIDING OFFICER:** Okay.  
19 **BY MR. STUCKY:**  
20 Q. Is that how you interpret the regulation?  
21 **A. Yes, but I have to add to that because part of**  
22 **the aquifer maintenance credit was not requiring**  
23 **the City to unsaturate the portion of the**  
24 **aquifer just to put water back into it. So**  
25 **you're -- you're correct, I mean, the**

1 and consists of an apparatus for diversion,  
2 treatment, recharge, storage, extraction, and  
3 distribution. So with respect to the City's  
4 aquifer maintenance proposal, is it your view,  
5 as you looked at that definition, that all  
6 aspects of that definition are met?  
7 **A. Yes.**  
8 Q. And I guess my question is as it applies to this  
9 definition, for example, if no source water is  
10 actually physically injected into the aquifer,  
11 how does one store or recover source water from  
12 the aquifer?  
13 **A. By -- by the accounting of a recharge credit.**  
14 Q. But the source water has already been sent  
15 directly to the City with respect to an aquifer  
16 maintenance credit; is that right?  
17 **A. That's correct.**  
18 Q. And, again, no source water is put in the  
19 aquifer, correct?  
20 **A. Under -- under the scenario of an AMC, source**  
21 **water is not put in the aquifer.**  
22 Q. And so at least you would agree with me that  
23 there's no storage of source water and then  
24 recov -- subsequent recovery of that source  
25 water from the aquifer; is that right?

1 **unsaturated portion of the aquifer is the**  
2 **dewatered space in the aquifer to put a physical**  
3 **recharge credit in. We just didn't want to**  
4 **require the City to unsaturate that to put water**  
5 **back in.**  
6 Q. Okay. And I think you've answered my question,  
7 then. With respect to an aquifer maintenance  
8 credit, it's possible to accumulate aquifer  
9 maintenance credits when the aquifer or the  
10 basin storage area is fully saturated; is that  
11 right?  
12 **A. That's correct.**  
13 Q. So in other words, with respect to the aquifer  
14 maintenance credit, we don't have to put water  
15 into an unsaturated portion of the aquifer,  
16 per se; is that right?  
17 **A. That's correct.**  
18 Q. Let's turn now back to aquifer storage and  
19 recovery system, that definition, it's in (d),  
20 right below. It says, aquifer storage and  
21 recovery system means a physical infrastructure  
22 that meets the following conditions. And  
23 there's a couple conditions, it says, is  
24 constructed and operated for artificial  
25 recharge, storage, and recovery of source water

1 **A. If it's the physical source water you're talking**  
2 **about, I agree with that.**  
3 Q. And if one is trying to accumulate -- has  
4 accumulated an aquifer maintenance credit and  
5 then that water is being withdrawn, I think it's  
6 your testimony that the source of that water  
7 then is not, in fact, source water from the  
8 Little Arkansas River; the source of that water  
9 is water left in storage that was not pumped.  
10 Is that right?  
11 **A. That's correct.**  
12 Q. Let's turn, then, to the mechanics of the City's  
13 proposal. You said in your deposition that you  
14 are, quote -- the City's proposal allows for,  
15 quote, to avoid a step just to pump a gallon to  
16 replace it with a gallon, end quote.  
17 **A. That's correct.**  
18 Q. Is that still your position today?  
19 **A. Yes.**  
20 Q. So as we track a gallon of the City's water,  
21 what happens is with an aquifer maintenance  
22 credit, the City sends a gallon of water  
23 directly to the City for municipal use and then  
24 at the same time a credit is accumulated where  
25 they can withdraw another gallon of water out of

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1 the aquifer at a later time because that water  
 2 was left in storage; is that right?  
 3 **MR. OLEEN:** I respectfully object  
 4 because I think we went through this entire  
 5 line of questioning; I know it's been  
 6 awhile, but I think we went through that  
 7 entire line of questioning with Wichita's  
 8 Mr. Pajor and I know we went through it  
 9 with Mr. Letourneau. And he's been on that  
 10 seat a long time, and we've all been here a  
 11 long time, and I prefer not to go through  
 12 that entire line of questioning again.  
 13 **PRESIDING OFFICER:** It does sound  
 14 familiar, are we going somewhere different?  
 15 **MR. STUCKY:** Yeah, I'm summing up,  
 16 actually, for what it's worth. And short  
 17 of a few objections, I'll sum up relatively  
 18 quickly.  
 19 **PRESIDING OFFICER:** Okay.  
 20 **BY MR. STUCKY:**  
 21 Q. So that is -- was your prior -- is that your  
 22 testimony?  
 23 **A. Well, it's a gallon -- okay. They divert water**  
 24 **from the Little Ark, treat it through the ASR**  
 25 **infrastructure, take it to a point to see if**

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1 **there's water -- space available in the basin**  
 2 **storage area, and if not, then they take it**  
 3 **directly to town. But I see it as the same**  
 4 **gallon of water. I don't see it as two separate**  
 5 **gallons. It's the same as if it was a**  
 6 **physical -- it would be a physical recharge**  
 7 **credit if space was available.**  
 8 Q. But if space isn't available, if a gallon of  
 9 water is sent to the City and then when that AMC  
 10 credit is withdrawn, another gallon of water can  
 11 be taken out of the aquifer. Is that a true  
 12 statement?  
 13 **A. At a later date, yes.**  
 14 Q. So for each gallon of water the City sends to --  
 15 sends directly to the City for municipal use  
 16 after treating it, they can then subsequently  
 17 take another gallon out of the aquifer based on  
 18 the water left in storage; is that right?  
 19 **A. Well, it's not quite a gallon because they leak**  
 20 **a little bit, but yes. Yes.**  
 21 Q. So do you believe that because the City  
 22 essentially is able to -- well, let me ask you  
 23 this: So they're essentially pumping a gallon  
 24 and then taking another gallon later; is that  
 25 right?

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1 **A. Yes.**  
 2 Q. And so do you believe that the City is  
 3 essentially double dipping or getting a two for  
 4 one, if you will, through this proposal?  
 5 **A. I -- I do not because the City has the ability**  
 6 **to pump the hole in the aquifer. Today they**  
 7 **could go out there and pump the gallon just to**  
 8 **replace it with a gallon, and that's what**  
 9 **they're not doing. Well, they have to do that**  
 10 **now, but this proposal is saying that they're**  
 11 **not going to pump a gallon just to replace it**  
 12 **with a gallon.**  
 13 Q. In your deposition, and just so it's for  
 14 everyone's benefit, on page 68 of your  
 15 deposition, Mr. Rolfs essentially asked you that  
 16 exact same question, he said in his question  
 17 that -- that you were accumulating these aquifer  
 18 maintenance credits and sending water directly  
 19 to the City at the same time. And he  
 20 essentially, I think, asked you if this was in  
 21 essence, double dipping, and I believe your  
 22 answer was that it was technically, if approved,  
 23 I think it could happen, I think was your  
 24 answer. Does that sound like the line of  
 25 questioning you were asked?

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1 **A. Yeah, it does, but I think I probably answered**  
 2 **that wrong because I don't think it's double**  
 3 **dipping. And I'm not trying -- I always try to**  
 4 **be very consistent with my answers, but I**  
 5 **don't -- I don't think it's double dipping**  
 6 **because the City can pump the hole. They --**  
 7 **they could run that loop, they could take it out**  
 8 **of the aquifer, send it to town, and put**  
 9 **these -- these -- the water into the aquifer**  
 10 **so ...**  
 11 Q. And I think you've already testified, I believe,  
 12 but I -- you know, it was long enough ago, you  
 13 said that when the -- through a basin storage  
 14 area, the City can also recharge the aquifer  
 15 even when it's full; is that right?  
 16 **A. They can in one of the recharge pits.**  
 17 Q. Okay. I'm going to wrap this up for everyone's  
 18 benefit, I'm going to use the whiteboard.  
 19 **A. How do we preserve this for the record?**  
 20 Q. I just want to sum -- sum this up.  
 21 **MR. OLEEN:** And so I don't interrupt  
 22 you when you get deep into it, Mr. Stucky,  
 23 I'm going to object, I don't know what this  
 24 whiteboard exercise -- I don't know the  
 25 benefits of that, it's certainly not

1 something that can be preserved for the  
2 record, for Madam Hearing Officer, your  
3 later review, the chief engineer's later  
4 review, some other court's later review.  
5 We're not talking about the scene of an  
6 accident here, I don't understand and nor  
7 do I think it's appropriate to use a  
8 whiteboard. Maybe some explanation about  
9 how it's relevant to sum up things.  
10 Actually, why are we summing up things,  
11 this is not a closing argument, this is  
12 Mr. Letourneau on cross-examination as  
13 well?  
14 **PRESIDING OFFICER:** Mr. Stucky.  
15 **MR. STUCKY:** What I'd like to do is  
16 I'd like to outline what he said with  
17 respect to the City's ASR proposal and I  
18 want to outline the differences with  
19 respect to the AMC proposal, and I think it  
20 would be easy for everyone to visualize if  
21 it's on a whiteboard. We put things on the  
22 screen previously in this hearing and  
23 it's -- there's public in the room and I  
24 think it beneficial to have it on the  
25 whiteboard so we can see.

1 statements as we first came into this  
2 hearing process.  
3 **MR. OLEEN:** But, I mean, Mr. Stucky  
4 says that he's written them down, and maybe  
5 he wrote them down accurately, but other  
6 counsel doesn't know and can't confirm  
7 that. What we know the witness said is  
8 what will be produced in the transcript.  
9 And so I object to trying to have an  
10 attorney characterize testimony of previous  
11 witnesses in the course of some sort of  
12 closing argument exercise.  
13 And we have a few people in the room,  
14 it's significantly dwindled, what was  
15 previously shown on the screen up top were  
16 documents that -- that had already been  
17 created and that the parties had seen  
18 before, and this is something that we're  
19 creating ad hoc right now, and so I think  
20 it's different in that way too.  
21 **PRESIDING OFFICER:** I'm going to --  
22 afraid I'm going to have to side with  
23 Mr. Oleen and Mr. McLeod. I know you've  
24 taken great pains to be prepared to do that  
25 and I regret that, but this does seem to be

1 **MR. MCLEOD:** If that's the  
2 explanation, I will raise my own objection  
3 at this point for the City. That all would  
4 have been splendidly -- splendidly done  
5 because they had Mr. Letourneau's  
6 deposition for a long time, could have  
7 generated that entire exhibit prehearing,  
8 and had that been done, I would not object  
9 to it. But -- but having not done it, I  
10 think it's not proper to do it on the  
11 whiteboard today.  
12 **MR. OLEEN:** I obviously have  
13 concerns about and am not okay with  
14 Mr. Stucky purporting to summarize DWR's  
15 witness in Mr. Stucky's words on a  
16 whiteboard. That can all be summarized in  
17 a legal brief after we have our great  
18 stenographer's transcript from these  
19 proceedings.  
20 **MR. STUCKY:** And my response to  
21 Mr. McLeod's objection is that some of  
22 these statements that I wrote down from  
23 prior testimony were given during the  
24 testimony in this hearing. I didn't have  
25 the benefit of having those prior

1 something nobody's had an opportunity to  
2 see before or be ready to respond to. And,  
3 again, I think you'll have opportunity to  
4 make the points that you would otherwise  
5 make so ...  
6 **MR. STUCKY:** And for the record,  
7 there was no pain caused to me, Mr. Boese  
8 brought the whiteboard so ...  
9 **PRESIDING OFFICER:** Thank you,  
10 Mr. Boese.  
11 **MR. STUCKY:** So really no bother to  
12 me.  
13 **BY MR. STUCKY:**  
14 Q. I'll just finish my line of questioning very,  
15 very quickly without a whiteboard, then. With  
16 respect to an ASR Phase II recharge credit  
17 that's accumulated, I think you, and you can  
18 agree or disagree with me as far as what your  
19 prior testimony was, I think you previously  
20 said, number one, water is taken during overflow  
21 from the Little Arkansas River with a surface  
22 water permit; is that right?  
23 **A. Correct.**  
24 Q. Number two, I think you said it's treated at the  
25 Bentley ASR facility, right?



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1 **A. Yes.**  
 2 Q. And number three, you said it's injected into  
 3 the aquifer?  
 4 **A. Correct.**  
 5 Q. And number four, I think you've said that the  
 6 artificial recharge credit is then created based  
 7 on the beneficial use obtained for physical  
 8 recharge; is that right?  
 9 **A. Correct.**  
 10 Q. And then number five, you said that it -- that  
 11 this water, the source water is stored in the  
 12 aquifer for future use subject to any losses, I  
 13 think is what you stated. Does that sound  
 14 right?  
 15 **A. Yes, close.**  
 16 Q. And then number six, you indicated that it's  
 17 diverted to the City for municipal use under a  
 18 different permit; is that right?  
 19 **A. That's correct.**  
 20 Q. So we had six steps here with a ASR II recharge  
 21 credit. I wasn't able to write these on the  
 22 whiteboard for your benefit, but would you agree  
 23 that with respect to an aquifer maintenance  
 24 credit, steps three through five would not  
 25 exist; is that true? And I'll refresh those,

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1 step three was water injected into the aquifer,  
 2 step number four was artificial recharge credit  
 3 created based on a beneficial use for physical  
 4 recharge, and number five was this source water  
 5 is stored in the aquifer for future use, would  
 6 you agree that those three steps, at least,  
 7 would not exist with respect to an aquifer  
 8 maintenance credit?  
 9 **A. A physical -- number three, if I recall,**  
 10 **physical would not occur, that's correct**  
 11 **physical recharge would not occur. But a re --**  
 12 **a recharge credit happens in that number four,**  
 13 **but then number five is correct, source water is**  
 14 **not taken to town.**  
 15 Q. Okay. And let me clarify number four,  
 16 number four, you said that at the time with a  
 17 ASR II credit, the recharge credit is created at  
 18 the point that water is injected into the  
 19 aquifer, that's what you stated?  
 20 **A. That's correct.**  
 21 Q. But number four would not apply to an aquifer  
 22 maintenance credit because this recharge credit  
 23 is actually created at the point the water is  
 24 treated and sent directly to the City; is that  
 25 right?

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1 **A. That's right.**  
 2 Q. And, in fact, number five also would not exist  
 3 with respect to an aquifer maintenance credit  
 4 because no source water is stored in the  
 5 aquifer; is that right?  
 6 **A. That's correct.**  
 7 Q. And really there should have been another step,  
 8 there's no ability, then, to take that source  
 9 water out of the aquifer and use it at a later  
 10 time; is that right?  
 11 **A. That's correct, because it's a recharge credit.**  
 12 **It's the recharge credit that they can take out**  
 13 **and use.**  
 14 Q. So at least as it relates to the steps or the  
 15 mechanics of how a recharge credit is  
 16 accumulated pursuant to ASR Phase II, you would  
 17 agree with me that there's several of those  
 18 steps that would not be found with the  
 19 accumulation of an aquifer maintenance credit;  
 20 is that right?  
 21 **A. That's right.**  
 22 **MR. STUCKY:** No further questions.  
 23 **PRESIDING OFFICER:** Ms. Wendling.  
 24 //  
 25 //

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1 **CROSS-EXAMINATION**  
 2 **BY MS. WENDLING:**  
 3 Q. All right. Mr. Letourneau, I believe you spoke  
 4 about your roles and responsibilities, and those  
 5 include the annual reporting process; is that  
 6 correct?  
 7 **A. Well, I -- I'm not responsible for the aquifer**  
 8 **storage and recovery reporting, but annual water**  
 9 **use reports are part of my program, yes. Or our**  
 10 **program, I should say, I'm sorry.**  
 11 Q. I will possibly use the wrong terminology  
 12 occasionally.  
 13 **A. That's okay.**  
 14 Q. What is the purpose of the annual water use  
 15 report?  
 16 **A. For a regular appropriation, annual water use**  
 17 **reporting has been a permit condition, I**  
 18 **believe, since the late '50s, but it wasn't**  
 19 **until 1988 that water use reporting became**  
 20 **required by state statute. And we require an**  
 21 **annual water use report of any -- any active**  
 22 **water right, any approved water right so we know**  
 23 **how much water is being used, because you can't**  
 24 **manage the resource appropriately if you don't**  
 25 **know how much water is being used. Plus the**

1 **development period of a permit, we have to know**  
2 **the annual water use reporting so we know the**  
3 **maximum year of record during the development or**  
4 **perfection period so we can issue the**  
5 **certificate which quantifies that particular**  
6 **property right. So it's very important data.**

7 Q. All right. And what happens if someone fails to  
8 report?

9 **A. If someone fails to report, they are subject to**  
10 **a civil penalty. And recently, I think two**  
11 **years ago, the legislature changed that**  
12 **particular statute that if someone fails -- they**  
13 **fail to file the report and we don't get it,**  
14 **then they are subject to a suspension. So not**  
15 **only is there a civil penalty but we can also**  
16 **suspend the use of water until we receive the**  
17 **annual water use report.**

18 Q. Okay. And do you know based on your experience  
19 with the water use reports how the reported  
20 quantity used compares to the authorized  
21 quantity?

22 **A. Yes, I can speak to averages for the whole**  
23 **state. The certificates are based on a maximum**  
24 **year of record, the maximum one out of five**  
25 **years, so you're going to need that maximum**

1 **application and a change application.**

2 Q. And other than a new appropriation of water, is  
3 there any other reason for a new application?

4 **A. No. Whether -- whether it's temporary, that's**  
5 **new, term permit, that's new, and a new**  
6 **appropriation of water is new so ...**

7 Q. And do all water rights come with permit  
8 conditions?

9 **A. Yes, now they do.**

10 Q. Now they do?

11 **A. Yeah.**

12 Q. Previously they didn't?

13 **A. I'm sorry that I stalled, I thought about**  
14 **temporary permits, but, yes, sometimes we will**  
15 **put a permit condition on a temporary for a**  
16 **meter. Now term permits have conditions, but**  
17 **yes --**

18 Q. Okay.

19 **A. -- they all have conditions.**

20 Q. And we talked about the difference -- well, you  
21 were also responsible for change applications,  
22 correct?

23 **A. That's correct.**

24 Q. And you mentioned a difference between a change  
25 and a modification, and I wasn't quite clear on

1 **amount of water 20 percent of the time. So,**  
2 **normally, folks, especially like in the**  
3 **irrigation world, they use approximately on**  
4 **average 65 to 70 percent of their authorized**  
5 **quantity each year.**

6 Q. Did I hear you correctly saying you use -- water  
7 users use their maximum amount only about  
8 20 percent of the time?

9 **A. Well, that's how the perfection period is built**  
10 **up, one out of five years, that maximum year of**  
11 **record. And so, yes, for -- the statistics show**  
12 **that folks need that one out of five or two out**  
13 **of ten years.**

14 Q. Okay. And in your roles and responsibilities,  
15 you also review new applications for water  
16 appropriation?

17 **A. Yes.**

18 Q. And I think we discussed the factors that you  
19 consider in your previous testimony; is that  
20 correct?

21 **A. That's correct.**

22 Q. Are there public hearings held for new  
23 appropriations or new applications?

24 **A. There can be. Very seldom but, yes, I mean,**  
25 **sometimes we do have a public hearing for a new**

1 that. Can you tell me what is a change and what  
2 is a modification?

3 **A. Yes, under the statute, change applications are**  
4 **filed for three specific reasons. We can -- the**  
5 **statute lays out you can change the point of**  
6 **diversion, the place of use, or use made of**  
7 **water. And if you're asking about the proposal**  
8 **here today, it's about changing permit**  
9 **conditions, and the change statute does not**  
10 **allow a change for permit conditions. It's only**  
11 **a change in point of diversion, place of use,**  
12 **and use made of water.**

13 Q. So use made of water, can you tell me what the  
14 uses are?

15 **A. Yeah, pretty -- I think so. Artificial**  
16 **recharge, domestic -- they're alphabetical in**  
17 **our rules, but there's 13 different beneficial**  
18 **uses of water, and artificial recharge,**  
19 **domestic, irrigation, industrial, recreational,**  
20 **municipal, thermal exchange, which is a fancy**  
21 **word for heat pump, and then hydropower is**  
22 **another one. And I probably won't -- I'd have**  
23 **to look at the rule to lay out all the 13.**

24 Q. So if I'm changing between those 13 uses, that's  
25 when I file a change application?

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1 **A. If you're changing, say, from irrigation to**  
 2 **municipal, that does require a change in use**  
 3 **made of water, that's correct.**  
 4 Q. But irrigation to livestock does not?  
 5 **A. Yes, irrigation to livestock is stock watering.**  
 6 **And I'm sorry I didn't mention that particular**  
 7 **beneficial use, but, yes, that requires a**  
 8 **change.**  
 9 Q. Okay.  
 10 **A. Now, if it's domestic use, someone can just**  
 11 **dismiss their irrigation water right but retain**  
 12 **that well for domestic purposes, and that**  
 13 **doesn't require a change application.**  
 14 Q. But municipal use to ASR use, would that change  
 15 of use require a change application?  
 16 **A. Yes, if you were changing from municipal use to,**  
 17 **it's artificial recharge, then, yes, that would**  
 18 **require a change.**  
 19 Q. Okay. And do you recall how it was determined  
 20 that a change application was -- or a new  
 21 application, neither of those were needed in  
 22 this -- for this proposal?  
 23 **A. Yes, because we weren't -- they weren't asking**  
 24 **for any new water, so that -- it was not a new**  
 25 **application. Now, with that said, there were**

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1 **some new applications filed for additional**  
 2 **recharge credits, but those then were withdrawn,**  
 3 **the City requested that those be withdrawn and**  
 4 **dismissed. So then, again, we're not changing**  
 5 **point of diversion, place of use, or use made of**  
 6 **water, so that's why we didn't -- a change**  
 7 **application is not required.**  
 8 Q. Okay. Do you recall if there was a specific  
 9 discussion on whether such an application was  
 10 needed or if permitting the proposal document  
 11 was sufficient?  
 12 **A. Not amongst this group. I had somebody hit me**  
 13 **up about it in the Capitol, I don't remember the**  
 14 **legislator. But when I explained -- when I**  
 15 **explained it to them, they fully understood.**  
 16 Q. All right. And what is the purpose of the fees  
 17 associated with the new or change application?  
 18 **A. The fees, so our funding is state -- a little**  
 19 **bit of state water plan, fees, and state general**  
 20 **fund. And the legislature puts the fees in**  
 21 **the -- for new apps, changes, term permits,**  
 22 **temporaries, and then a fee for field**  
 23 **inspections to help offset the state general**  
 24 **fund costs.**  
 25 Q. But there's not a fee for these miscellaneous

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1 uncharacterized modifications?  
 2 **A. That's -- that's correct. Now, there's a fee**  
 3 **for the determination of interest in a water**  
 4 **right. And those are the fees I can think of**  
 5 **off the top of my head.**  
 6 Q. Okay.  
 7 **A. But ...**  
 8 Q. And you also talked about the administration of  
 9 water rights for minimum desirable streamflow?  
 10 **A. Correct.**  
 11 Q. And that's presented in two specific areas?  
 12 **A. Well, we do -- for groundwater to surface water,**  
 13 **we have one specific area right now, with the**  
 14 **potential of another one in 2021. We do minimum**  
 15 **desirable streamflow with surface water rights**  
 16 **every year that those flows drop below the MDS**  
 17 **levels, I'll call them, but, yes, we do MDS**  
 18 **orders every year it gets dry.**  
 19 Q. So if I understand correctly, then, groundwater  
 20 use can impact minimum desirable streamflow?  
 21 **A. Yes, it can.**  
 22 Q. But you have only identified that occurring in  
 23 two specific cases?  
 24 **A. We have enough data in those two areas to**  
 25 **administer the groundwater pumping related to**

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1 **the streamflow. And it's very narrow. Like the**  
 2 **Republican River alluvium is very attached to**  
 3 **the streamflow, and we've got the modeling to**  
 4 **show how to do groundwater administration in the**  
 5 **Republican River. And now we've got the data in**  
 6 **the Rattlesnake Creek to show the impact of the**  
 7 **groundwater pumping to the minimum -- minimum**  
 8 **desirable streamflow.**  
 9 Q. So if there were modeling to show that the  
 10 pumping considered by this proposal would impact  
 11 minimum desirable streamflow, what actions would  
 12 be taken?  
 13 **A. And I actually think the modeling has been done**  
 14 **and what the impact was, but if there -- if**  
 15 **there was -- and we want to say that MDS under**  
 16 **the statute's real-time administration, so you'd**  
 17 **want to look at the groundwater pumping that had**  
 18 **almost an instantaneous impact to the surface**  
 19 **water flow. Based on those conditions, yes, we**  
 20 **could do MDS administration.**  
 21 Q. And can you explain to me what MDS  
 22 administration is?  
 23 **A. There is -- there's a statute in the Water**  
 24 **Appropriation Act that lays out minimum**  
 25 **desirable streamflows in a ton of river basins**

1 **at each month of the year, and those are target**  
2 **flows for USGS gages along those rivers. And**  
3 **the amounts are in cubic feet per second. And**  
4 **703(a), I believe, is -- K.S.A. 82a-703(a), I**  
5 **think, Tessa, is --**

6 Q. Will you check GMD's Exhibit 21 in Volume II to  
7 confirm that I'm looking at the right section?

8 A. That -- that's correct.

9 Q. Okay.

10 A. And it starts K.S.A. 82a-703(a), (b), and then  
11 (c) lays out the watercourses that I had talked  
12 about.

13 Q. Okay. Sorry to interrupt you. So you were  
14 talking about how you would administer MDS.

15 A. Yes, if flows drop below these values, then we  
16 issue orders on water rights that are considered  
17 junior to that 1984 priority date, and then they  
18 cease pumping until the streamflow comes back  
19 for two weeks, I believe.

20 Q. And it's every single water right that's junior?

21 A. Every single surface water right that's junior.

22 And in the Republican River, it's every single  
23 surface and groundwater right that is junior.

24 But then to complicate things, in the -- in the  
25 Republican River, we have enough data there to

1 We have a proposal of proposed pumping, but we  
2 don't yet -- we have some modeling that shows  
3 streamflow could be impacted. How would you  
4 plan on addressing that if it is conclusively  
5 shown that the pumping impacts MDS?

6 A. Well, we would have to look at the modeling and  
7 look at the impact of -- the location and the  
8 impact of the groundwater pumping to actually  
9 make a determination if water rights  
10 administration would make a real-time -- a  
11 real-time effect on streamflow.

12 Q. And while you're doing that determination,  
13 surface water rights post 1984 would be  
14 suspended?

15 A. If -- if -- yes, we would do MDS administration  
16 on the surface water rights, and they're --  
17 yeah, they're administered until the streamflows  
18 come back.

19 Q. And does that include a bank storage well?

20 A. You know, that's a really good question, bank  
21 storage wells are considered surface water. But  
22 if the bank storage well is full, I imagine the  
23 stream's pretty full.

24 Q. All right. Doesn't matter then.

25 A. Yeah.

1 show how often people were on during MDS and off  
2 during MDS. So we've established what we call a  
3 consent agreement in our rules. And the folks  
4 were on 32 percent of the time when MDS  
5 administration was occurring, so they can enter  
6 into a consent agreement for 32 percent of their  
7 authorized quantity for a certainty of water  
8 supply during an MDS administration.

9 Q. And certainty of water supply during the  
10 administration means they would still be able to  
11 do some reduced pumping?

12 A. Correct.

13 Q. Okay. So with that, how does one -- how does  
14 DWR go about determining whether it's the  
15 surface water pumping or groundwater pumping  
16 that's impacting MDS? If you just turn off  
17 surface water rights, that doesn't help if it's  
18 an actual groundwater right that's impacting  
19 MDS?

20 A. Well, in the Republican River, we know that both  
21 surface water and groundwater rights are  
22 impacting the streamflow. And so that's why we  
23 issue orders on both surface and groundwater.

24 Q. Okay. In, for example, the Equus Beds and the  
25 Little Arkansas River, you don't have that data.

1 Q. Okay. When you are reviewing new applications,  
2 what role does need play in your decision  
3 whether or not to appropriate water?

4 A. Does what play, I'm sorry?

5 Q. Need?

6 A. Need?

7 Q. The water you would need for that?

8 A. Well, yeah, that -- that's a big role. Anybody  
9 that would apply for -- any -- any use of water  
10 is a beneficial use, and so actually folks get  
11 approval, but then they actually develop and  
12 perfect what is needed. And so they might get  
13 an application for, say, 100 gallons, and then  
14 as they move through the development period and  
15 only need 50 gallons, then the certificate is  
16 issued for 50, and then that other 50 becomes  
17 available for somebody else to appropriate.

18 Q. Okay. So at the time you're applying for the  
19 water permit, your need doesn't have to be  
20 certain?

21 A. Well, we have to have -- the need has to be  
22 reasonable. There has to be a -- the  
23 application has to be reasonable when it comes  
24 to us, and then if it meets all the criteria and  
25 reasonable, it can be approved, but then it's

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1 **developed based on the actual need.**  
 2 Q. Okay. During your previous testimony, you said  
 3 that the City couldn't access the recharge  
 4 credits when they needed them. Do you recall  
 5 that testimony?  
 6 **A. Yes, that's correct.**  
 7 Q. Can you explain to me what you meant by needed  
 8 in that context?  
 9 **A. Right, under the current levels that -- or the**  
 10 **1993 levels, we learned from the '11 and '12**  
 11 **drought that everybody's pumping, not just the**  
 12 **City's, but the domestics, the irrigators,**  
 13 **anybody else in the Equus Beds well field drew**  
 14 **that water table down very close to that 1993**  
 15 **level. With that said, I don't know if it ever**  
 16 **got below that, but it was very, very close and**  
 17 **it create -- created concerns for the City.**  
 18 **Below that current 1993 level, they cannot**  
 19 **access the recharge credits. And so if it's**  
 20 **below that level and they're in a drought and**  
 21 **they need the recharge credits, that's when they**  
 22 **could not access them. And I think that's what**  
 23 **I meant by that.**  
 24 Q. All right. So need in terms of needing their  
 25 water supply?

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1 **A. Correct, uh-huh.**  
 2 Q. So by lowering the index levels, the City is now  
 3 able to access more of that water when they need  
 4 it?  
 5 **A. Correct.**  
 6 Q. And that's water that they are not presently --  
 7 would not presently be able to access with the  
 8 existing minimum index level?  
 9 **A. Well, they can access their native water rights**  
 10 **below that level, but they can't access recharge**  
 11 **credits.**  
 12 Q. Have you quantified the amount of water the City  
 13 would be able to access with the lowered index  
 14 level?  
 15 **A. 19,000 acre-feet if they -- if they can build**  
 16 **that much credit.**  
 17 Q. Under the existing permit?  
 18 **A. Correct.**  
 19 Q. I'm talking about just the change in index level  
 20 alone, because they can always apply for more  
 21 permits, so have you quantified the difference  
 22 between the existing minimum index level and the  
 23 proposed minimum index level?  
 24 **A. I -- I don't know if we did.**  
 25 Q. Does having a water right guarantee the holder

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1 of that right access to water whenever they want  
 2 that water?  
 3 **A. No.**  
 4 Q. So you talked about needing to have a reasonable  
 5 quantity of water for your application. How  
 6 does -- how is the reasonable quantity  
 7 determined?  
 8 **A. For -- it's different for the different**  
 9 **beneficial uses of water. So, like, irrigation,**  
 10 **it's acre-foot per acre based on your region of**  
 11 **the state. For stock watering, it's up to**  
 12 **15 gallons per head per day for a confined**  
 13 **feeding operation of cattle, 35 gallons per head**  
 14 **per day for a dairy. For cities, it's gallons**  
 15 **per person per day based on a projected growth.**  
 16 Q. For the City's reasonable use, how did you  
 17 incorporate water customers or utility  
 18 customers, or is it limited to this population  
 19 of that municipality?  
 20 **A. Well, part of the projection for a city is its**  
 21 **people, its industrial users, and then any other**  
 22 **use that they might have, whether it be golf**  
 23 **courses, recreational use, but it's -- it's**  
 24 **everything that is encompassed in that city.**  
 25 Q. And does all of the -- is all of that

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1 categorized as municipal use, or is it  
 2 separately categorized for the portion that's  
 3 industrial or recreational?  
 4 **A. It's all umbrellaed under municipal use.**  
 5 Q. And that also includes -- municipal use includes  
 6 any customers the City of Wichita might choose  
 7 to sell the water?  
 8 **A. That's correct.**  
 9 Q. Regardless of the use of that customer?  
 10 **A. That's -- that's correct. I'm trying to think**  
 11 **if we have -- I don't -- I know Wichita doesn't,**  
 12 **but I don't know if we've got any municipality**  
 13 **that has, like, a stand-alone golf course or**  
 14 **something. But I think it's all umbrellaed**  
 15 **under municipal.**  
 16 Q. So if the City of Wichita had water rights for  
 17 irrigation purposes, hypothetically the City of  
 18 Wichita owned farmland, is that water use for  
 19 irrigation purposes subject to the reasonable  
 20 limits for irrigation or reasonable limits for  
 21 municipal use?  
 22 **A. For irrigation. Under that scenario, it's**  
 23 **irrigation.**  
 24 Q. Okay. And the same thing, if the City of  
 25 Wichita has a pool that uses water for

1 recreational use, is that subject to the  
2 reasonable quantity for recreation or for  
3 municipal use?  
4 **A. Now that -- under that scenario, it's under the**  
5 **municipal umbrella.**  
6 Q. How would one know which reasonable use is going  
7 to apply under municipal use if irrigation is  
8 irrigation rules and rec pools are municipal  
9 rules?  
10 **A. Tessa, I may have misunderstood, I thought that**  
11 **you said that the City owned farm ground under**  
12 **that scenario for irrigation.**  
13 Q. Uh-huh.  
14 **A. So that's a stand-alone irrigation permit in our**  
15 **eyes.**  
16 Q. Okay.  
17 **A. But if it's -- if it's, say, the water park in**  
18 **Wichita, that's under -- that's serviced by the**  
19 **distribution system of the City, so that's the**  
20 **umbrella -- so that would be the connection, the**  
21 **common distribution system of the City. That**  
22 **would be the municipal use.**  
23 Q. So an industrial facility that's under the City  
24 of Wichita common distribution system falls  
25 under reasonable municipal use, not reasonable

1 industrial use?  
2 **A. That's correct.**  
3 Q. And how does drought planning fit into  
4 reasonable -- a reasonable use for drought  
5 planning, how does -- how is that ...  
6 **A. Well, we hope that somebody plans for a drought.**  
7 **I mean, we get -- we get phone calls, City of**  
8 **Florence most recent, you know, they're out of**  
9 **water, they didn't plan for a drought, so we're**  
10 **hoping that municipalities plan for a drought,**  
11 **and so that -- that's to be part of the**  
12 **reasonable -- when they're justifying an**  
13 **application, that would be part of it, we would**  
14 **hope.**  
15 Q. Okay. So the use -- using water for a drought  
16 falls under the generic municipal umbrella as  
17 well?  
18 **A. Yes.**  
19 Q. And if I am applying for an irrigation permit,  
20 am I also able to factor in drought when I need  
21 that appropriation?  
22 **A. Yeah, when we do irrigation, it's the net**  
23 **irrigation requirement of -- it's the maximum**  
24 **irrigation needed in that county based on, I**  
25 **believe, USDA numbers; it's the Kansas**

1 **irrigation Guide is what we use, and I believe**  
2 **those are USDA numbers. And that is the maximum**  
3 **needed, and so that's when we'll set up the max**  
4 **needed for irrigation, approve it, and then**  
5 **that's when they develop the maximum year one**  
6 **out of five years, so that does help with**  
7 **drought.**  
8 **With that said, though, in '11 and '12, the**  
9 **irrigators got behind because of double**  
10 **cropping, and it just was very, very brutal. So**  
11 **they actually needed additional water, and so**  
12 **that's when we developed the drought term**  
13 **permit. But then we made modifications to the**  
14 **MYFA statute to help with the irrigators.**  
15 **Irrigators can make adjustments on short-term,**  
16 **they can make short-term planning decisions, and**  
17 **so that's a pretty good drought tool for**  
18 **irrigation. Not for a municipality, though.**  
19 Q. So if an irrigator wants to plan for a drought,  
20 they use the MYFA tool?  
21 **A. Well, if they get in a bind because of the**  
22 **drought they use the MYFA tool. Hopefully,**  
23 **we've set up their water rights on a maximum**  
24 **year of record that they have enough water most**  
25 **of the time for a drought.**

1 Q. But you said the maximum year of record is one  
2 out of five years, correct?  
3 **A. Correct, but they have that quantity every year.**  
4 **That -- that quantity is established based out**  
5 **of one out of five years, but they have that**  
6 **quantity every year.**  
7 Q. And for -- what the City's proposal is the  
8 quantity of water they would need 1 out of  
9 100 years for this 1 percent drought?  
10 **A. Well, it's -- it's three out of eight years in a**  
11 **1 percent drought.**  
12 Q. Okay. And from what I understood, you use the  
13 annual water use reporting to ensure compliance  
14 with the reasonable quantity; is that correct?  
15 **A. If -- if we're calling the authorized quantity**  
16 **reasonable, then, yes, compliance with the**  
17 **authorized quantities.**  
18 Q. When would the authorized quantity not be  
19 reasonable?  
20 **A. It -- it always is, yep.**  
21 Q. And for -- because I recently had the privilege  
22 of submitting one, if you're doing a livestock  
23 water use reporting, do you report number of  
24 head, type of animal by month, by location?  
25 **A. As a secondary to that annual water use report.**

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1 **The primary, though, is the meter readings from**  
 2 **each well. But then if -- if, say, a meter goes**  
 3 **down, or something, we ask for that secondary**  
 4 **information so we can determine an estimated**  
 5 **quantity based on head per day.**  
 6 Q. So the head per day is not required?  
 7 **A. Well, not if somebody has good meter data, then**  
 8 **we don't follow up on the secondary.**  
 9 Q. You don't follow up but it's still submitted?  
 10 **A. Correct.**  
 11 Q. Okay. I was going to say I wasted my time  
 12 presenting that.  
 13 **A. Did you have good meter readings?**  
 14 Q. Yes.  
 15 **A. Okay. Thank you for that extra data, though,**  
 16 **because to add to that, not to tie us up, we use**  
 17 **that water use data to make sure that another**  
 18 **new application that may come in is reasonable**  
 19 **because we compare those numbers to their peers.**  
 20 **That's what we -- that's another use of our**  
 21 **annual water use information.**  
 22 Q. So I believe you have a considerable amount of  
 23 data for irrigation and livestock use based on  
 24 these water use reports, would you agree?  
 25 **A. Well, every beneficial use we do.**

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1 Q. So help me understand what type of information  
 2 you have on municipal use that is similar to the  
 3 number of head by month, by location?  
 4 **A. Municipal use on their annual water use reports,**  
 5 **we have the detail for each well or pump site,**  
 6 **then we have detail on their distribution**  
 7 **system. We've got raw water diverted under**  
 8 **their rights by month, then raw water purchased**  
 9 **by month, then raw water sold by month, and then**  
 10 **we actually have a breakdown of the industrial**  
 11 **users in that distribution system. And we also**  
 12 **ask for the residential and commercial data by**  
 13 **month and then the water provided free, because**  
 14 **with that particular matrix we can determine the**  
 15 **unaccounted for water for a municipality because**  
 16 **of leaks or slow customer meters.**  
 17 **Then we also ask for the number of each**  
 18 **type of hookup, then we ask for the population.**  
 19 **And add to that, then, we ask for the amount of**  
 20 **water that's treated and then discharged. And**  
 21 **so we -- and then a breakdown, then, of detail**  
 22 **for every wholesale customer by month. And so**  
 23 **we've got extremely detailed information on**  
 24 **municipal use in Kansas.**  
 25 Q. Do you feel certain that municipal use is

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1 reasonable?  
 2 **A. Yes.**  
 3 Q. And the proposed use for the AMCs is all  
 4 categorized as municipal use; is that correct?  
 5 **A. To use the recharge credits, yes, that's --**  
 6 **that's considered municipal use. Accumulating**  
 7 **them is considered artificial recharge.**  
 8 Q. So based on our earlier example where the City  
 9 of Wichita has a field that they irrigate, AMCs  
 10 cannot be used to irrigate?  
 11 **A. If it's an irrigation water right, that's**  
 12 **correct. But if it's an irrigation system**  
 13 **within their common distribution system, they**  
 14 **could.**  
 15 Q. So AMCs could be used to operate the City's  
 16 fountains?  
 17 **A. Yes.**  
 18 Q. To your knowledge, are all of these water rights  
 19 issued to the City municipal use water rights?  
 20 **A. Well --**  
 21 Q. Or storage, aquifer storage?  
 22 **A. Yes.**  
 23 Q. Is it possible that an authorized quantity or a  
 24 water right exceed the reasonable use  
 25 limitation?

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1 **A. I -- I don't know how that could occur. I don't**  
 2 **know.**  
 3 Q. For -- if I have a stock watering water right  
 4 that is authorized for 100 acre-feet, but based  
 5 on the number of livestock I have in that area  
 6 it -- a reasonable quantity would allow, would  
 7 say, no, you can use 200 feet but I'm only  
 8 authorized for 100?  
 9 **A. Then you couldn't use more than 100 acre-feet.**  
 10 Q. Okay. And if we turn that scenario around where  
 11 I'm authorized for 100 acre-feet but the number  
 12 of live -- I don't have any livestock that year,  
 13 so my reasonable use would be zero?  
 14 **A. Correct.**  
 15 Q. And so I would not be allowed to use my  
 16 authorized amount because I didn't have any  
 17 livestock?  
 18 **A. Correct, you can't -- you can't use -- you have**  
 19 **to use that water for its beneficial purpose.**  
 20 Q. And beneficial use, is that -- that's the list  
 21 of 13 items?  
 22 **A. Yes, Kansas has 13 beneficial uses of water. I**  
 23 **should count them.**  
 24 Q. I believe that is in K.A.R. 5-1-1 --  
 25 **A. Correct.**

1 Q. -- that we've been in earlier, Exhibit 22. Do  
2 you want to flip to the definition of beneficial  
3 use, I believe it's (o)?  
4 **A. I sure hope it's 13. Okay.**  
5 **PRESIDING OFFICER:** Uh-oh.  
6 **A. What'd they add?**  
7 **BY MS. WENDLING:**  
8 Q. Do you see storage listed as one of the uses for  
9 beneficial use?  
10 **A. No, storage is not.**  
11 Q. Okay. And --  
12 **A. It's actually 14, for the record, there's 14**  
13 **beneficial uses of water.**  
14 Q. All right. So in storing potentially 120,000  
15 acre-feet of water in the basin storage area,  
16 how is that considered a beneficial use if  
17 storage is not listed as a beneficial use?  
18 **A. That would be -- you can store water for a**  
19 **beneficial use, and this is no different than a**  
20 **reservoir. You can have storage in a reservoir**  
21 **for municipal use, recreational use, for**  
22 **industrial use. And so they can store water in**  
23 **this basin storage area for municipal use.**  
24 Q. Does the concept of storing water for future  
25 beneficial use apply equally to all water uses?

1 Q. And we've talked about their native water rights  
2 being roughly 40,000 acre-feet per year; is that  
3 correct?  
4 **A. In the Equus Beds well field, yes.**  
5 Q. And also the ability to withdraw 19,000 or  
6 19,500, one of the two, acre-feet of water in  
7 recharge credits?  
8 **A. When they accumulate that amount of recharge**  
9 **credits, yes.**  
10 Q. Okay. And then the City would also have water  
11 rights from Cheney Reservoir; is that correct?  
12 **A. That's correct.**  
13 Q. And do you happen to know that quantity?  
14 **A. I believe it's 60,000 acre-feet. I can't --**  
15 **it's 60 or 70,000, I can't remember.**  
16 Q. Okay. And then they also have a permit that  
17 allows them to withdraw water from the Little  
18 Arkansas River -- divert water from the Little  
19 Arkansas River; is that correct?  
20 **A. That's correct.**  
21 Q. And if I said that was roughly 45,000 acre-feet,  
22 does that sound correct?  
23 **A. I don't know. I don't.**  
24 Q. Are you familiar with their permit to divert  
25 water from the Little Arkansas?

1 **A. Yes, yes, I believe so. I mean, you have to**  
2 **store it before you can use it, that's how I can**  
3 **see it -- that being equal for all beneficial**  
4 **uses. Say if you've got a right for irrigation**  
5 **but your source is storage in a reservoir, you**  
6 **have to store it in that reservoir first before**  
7 **it becomes available for irrigation. And so**  
8 **same -- this is the same with the recharge**  
9 **credits, they have to store the recharge credits**  
10 **before they're available for municipal use.**  
11 Q. So I'm irrigating and I know this year I'm not  
12 using my full water appropriation, can I pump  
13 that water to store in my water tower for next  
14 year when I think I'll need it?  
15 **A. What I would do is apply for a MYFA, and that**  
16 **way under a multi-year flex account you would**  
17 **have that ability to use that in the future, up**  
18 **to five times authorized.**  
19 Q. But could I build my own water tower to store my  
20 appropriated water right?  
21 **A. Yeah, I don't see why you couldn't.**  
22 Q. In your role administering water appropriation  
23 rights, are you familiar with water -- Wichita's  
24 water rights generally?  
25 **A. Yes, I think so.**

1 **A. Yes, I -- yeah, I know there's a series of**  
2 **permits, but I don't know the authorized**  
3 **quantity off the top of my head.**  
4 Q. Okay. So if we were to add up all those  
5 numbers, the 40,000 in native water rights,  
6 19,000 in recharge credits, 50 -- or 60 to  
7 70,000 from Cheney, and 45,000 from the Little  
8 Arkansas River, can you do that math in your  
9 head by any chance?  
10 **A. I can do it.**  
11 Q. Do you happen to know the City's annual water  
12 use roughly?  
13 **A. 60 to 70,000, I believe.**  
14 Q. Which roughly matches exactly their water rights  
15 from Cheney; is that correct?  
16 **A. Correct.**  
17 Q. So then the additional roughly 100,000 acre-feet  
18 in water rights, if you look at the native water  
19 rights, recharge credits, and Little Arkansas  
20 River, exceeds their typical annual reported  
21 use?  
22 **A. Yes.**  
23 Q. And with that, it's still considered a  
24 reasonable authorized quantity for the City?  
25 **A. Yes, because two of those sources that you**



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1 referenced, the surface water from the Little  
 2 Ark and Cheney, are not available during a  
 3 drought. And so we hope that most  
 4 municipalities have multiple sources in case  
 5 they do get into a drought situation where water  
 6 is not available in their surface water systems.  
 7 Q. Is there any point in time where the authorized  
 8 quantity would exceed a reasonable amount for a  
 9 municipality?  
 10 A. I don't -- I don't think so, I don't -- I don't  
 11 know of an example of that.  
 12 Q. So the City could seek, you know, 500,000  
 13 acre-feet in water, and that would still be  
 14 considered reasonable?  
 15 A. No, we'd have to line up what the City is  
 16 requesting with population demands, municipal  
 17 demands -- or demands of the municipality. We  
 18 had a former person that just said an applicant  
 19 cannot come in and ask for blue sky, they have  
 20 to have the appropriate justification for  
 21 quantities.  
 22 Q. All right. And in this case, the drought  
 23 modeling is that justification?  
 24 A. Yes, but then there's no additional quantity  
 25 being asked for from the City; it's a

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1 different -- it's a different source of quantity  
 2 but not an overall arching additional quantity.  
 3 Q. Okay. And we talked about the annual water use  
 4 reporting, and if someone fails to use their  
 5 full appropriation in year one, that's fine. At  
 6 what point does nonuse become an issue for a  
 7 water right holder?  
 8 A. There's no partial abandonment in the State of  
 9 Kansas, and so once you have established your  
 10 water right and you're actively putting water to  
 11 beneficial use within the terms and conditions  
 12 and limitations of that water right, it's not  
 13 subject to any forfeiture. Now, if you've got  
 14 total nonuse and you are in an area of Kansas  
 15 that's still open to new appropriations and you  
 16 do not have due and sufficient cause for nonuse,  
 17 then the statute says the water right is subject  
 18 to forfeiture through abandonment after five  
 19 consecutive years of nonuse without due and  
 20 sufficient cause for nonuse. But we've got a  
 21 list of due and sufficient causes for nonuse  
 22 that we pretty much went to all of the reasons  
 23 that people reported for nonuse, and you have to  
 24 try really hard in Kansas to forfeit a water  
 25 right through abandonment.

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1 Q. Can you explain the rule of perfection with the  
 2 water right?  
 3 A. Absolutely. So very clear in Kansas law, you  
 4 can apply for what's reasonable, and if it meets  
 5 the criteria, then you are approved for a permit  
 6 to appropriate water for a beneficial use. Now,  
 7 you've got to complete the diversion works under  
 8 the law. Then once you start putting water to  
 9 beneficial use, the first time a drop of water  
 10 hits the ground, you've developed a water right,  
 11 but it is not yet quantified.  
 12 So you've got five years to perfect or  
 13 develop, but then we will even grant an  
 14 extension in time, the rules allow that, for --  
 15 to provide an opportunity to perfect and develop  
 16 a water right until that water right holder then  
 17 feels they've got a maximum year of record,  
 18 then, to write the certificate on. And once we  
 19 write the certificate, then that's your  
 20 quantified property right. So you apply for  
 21 what's reasonable, but then you get a  
 22 certificate based on your actual use in a  
 23 maximum year of record.  
 24 Q. And while I'm perfecting, I'm bound by the  
 25 reasonable quantity condition?

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1 A. You're bound by the authorized quantity.  
 2 Q. Okay. So if it's a wet year, I have an  
 3 irrigation water right, I don't need to water my  
 4 crops every day, but I'm going to just so that I  
 5 have that documented water use, am I allowed to  
 6 do that?  
 7 A. That happens. As long as the water doesn't  
 8 leave the place of use, then we consider that  
 9 not a waste of water. So that is the biggest  
 10 use it or lose it in Kansas right there is I'm  
 11 going to maximize my permit one year and get  
 12 the -- get the full benefit so we write the  
 13 certificate. But that -- that's legal to do.  
 14 Q. And I could also in the same scenario where I  
 15 have irrigation rights dig a hole in my ground  
 16 and just start filling this pond for one given  
 17 year so that I can maximize my water use?  
 18 A. Well, what's the pond for? See, the irrigation  
 19 water right's got to be used for irrigation,  
 20 which is watering crops. So filling a pond is  
 21 not irrigation, so that --  
 22 Q. Could I grow algae or something in my pond?  
 23 A. Well, yeah, I don't know.  
 24 Q. Okay. All right. And if I fail to perfect my  
 25 right, that quantity could be appropriated to

1 someone else?  
2 **A. It can be if that area is still open to new**  
3 **appropriation.**  
4 Q. Okay. All right. You were maybe not directly  
5 involved but familiar with the Phase I and Phase  
6 II approvals, correct?  
7 **A. Correct.**  
8 Q. And Mr. Stucky asked you a series of questions  
9 about the regulatory changes to 5-1-1 and  
10 5-1-12, I believe -- or 5-12-1.  
11 **A. Uh-huh.**  
12 Q. And did you have an involvement in proposing  
13 those regulatory changes?  
14 **A. I was part of the team, yes.**  
15 Q. And how -- who initially proposed those  
16 regulatory changes, do you recall?  
17 **A. Well, the City approached us after the '11 and**  
18 **'12 drought and then we had the Dairy Farmers of**  
19 **America under construction. So it was the chief**  
20 **engineer that ultimately proposed the changes.**  
21 Q. And you mentioned that there was a public  
22 hearing and there were several concerns?  
23 **A. Yes, absolutely.**  
24 Q. But you don't recall the specifics?  
25 **A. Well, I mean, it was -- yeah, it was going to**

1 Q. All right. You don't recall if there was a  
2 public hearing on the regulatory changes?  
3 **A. Oh, yeah, no, there was a public hearing, yes.**  
4 Q. Okay. But you don't recall the comments made  
5 during that hearing?  
6 **A. Well, recall generally that folks were concerned**  
7 **about Wichita dewatering the aquifer.**  
8 Q. Do you recall if there were a number of local  
9 groups, Kansas Farm Bureau, Kansas Livestock  
10 Association, GMDs that participated in that?  
11 **A. I remember, I believe, Sedgwick and Harvey**  
12 **County Farm Bureaus, but I don't know about --**  
13 **and I know Farm Bureau, of course, but I don't**  
14 **recall KLA.**  
15 Q. I don't believe you have our binder.  
16 **MS. WENDLING:** May I approach the  
17 witness?  
18 **PRESIDING OFFICER:** Yes.  
19 **MS. WENDLING:** And you.  
20 **BY MS. WENDLING:**  
21 Q. Tab number 7, can you flip to that and tell me  
22 what it appears to be?  
23 **A. Yes, the sign-in sheet for that hearing, that**  
24 **particular hearing.**  
25 Q. Okay. And as you flip through the attach -- the

1 **dewater the aquifer down to -- I think at that**  
2 **time there was confusion about bedrock, and**  
3 **there might even have been a draft about bedrock**  
4 **but I can't -- I don't recall. But, yeah, there**  
5 **was a big concern that Wichita was going to come**  
6 **in and dewater the aquifer, there was a lot of**  
7 **misunderstanding at that time.**  
8 Q. Okay. And do you know what was done to address  
9 that concern?  
10 **A. Well --**  
11 Q. Or the misunderstanding?  
12 **A. Well, just tried to lay out what the City had**  
13 **proposed. I mean, the talking points that I**  
14 **used were those graphics of the well field and**  
15 **the proposal, that table, the proposal that**  
16 **shows --**  
17 Q. This is going back to the concerns on the  
18 regulatory changes. So you were already using  
19 the proposal table --  
20 **A. No, no, not at that point. You know, that's a**  
21 **real good question, Tessa, I don't know what --**  
22 **what we did at that time. I think -- I know**  
23 **that we had one-on-one conversations with**  
24 **people, but I don't think there was a public --**  
25 **any type of public comment about it.**

1 additional pages, can you tell me what those  
2 appear to be?  
3 **A. Yeah, the -- the first item is from Kansas**  
4 **Legislative Research Department, with a -- I'm**  
5 **not reading it fully but with a couple -- with a**  
6 **comment about the rules. And then --**  
7 Q. If you flip about midway through, do you see a  
8 letter with the Kansas Farm Bureau letterhead on  
9 the top? It's about ten pages in.  
10 **A. Okay, I'm there.**  
11 Q. Okay. Does this refresh your recollection of  
12 whether or not Kansas Farm Bureau participated?  
13 **A. Yeah, I remember Farm Bureau did, but it was KLA**  
14 **that I wasn't sure about.**  
15 Q. Can you keep -- well, actually, while we're  
16 here, will you turn to the second page of the  
17 Kansas Farm Bureau letter?  
18 **A. Uh-huh, yes.**  
19 Q. Can you read the last sentence?  
20 **A. We strongly urge the agency not to adopt these**  
21 **proposed regulations.**  
22 Q. Now, if you go another one, two -- another ten  
23 pages, will you see a letter with the KLA  
24 letterhead?  
25 **A. Okay.**

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1 Q. And can you read the last sentence of that  
2 letter?  
3 **A. KLA urges the DWR to examine the potential**  
4 **adverse effects of these regulatory changes**  
5 **prior to moving forward with the final rule.**  
6 Q. Now, what would you -- how would you describe  
7 this packet of information I have under tab  
8 number 7?  
9 **A. Well, these were folks that were concerned about**  
10 **the -- the rule changes, but I know that the**  
11 **chief engineer at the -- the chief engineer was**  
12 **the hearing officer on that -- was the hearing**  
13 **officer for that hearing, and there was a**  
14 **genuine -- a general misunderstanding about what**  
15 **these changes would do, and the chief was fully**  
16 **aware of that, and so he was comfortable moving**  
17 **in to adopting these rules.**  
18 Q. Would you believe me if I said these were the  
19 public comments received regarding the proposed  
20 regulatory changes?  
21 **A. Oh, yes, absolutely.**  
22 **MS. WENDLING:** I would like to admit  
23 item number 7 as Intervenor's Exhibit 7.  
24 **PRESIDING OFFICER:** Any objection?  
25 **MR. MCLEOD:** Relevance and we have

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1 had our own public comment sections in this  
2 hearing, extensive public comment, actually  
3 directed to the topic of this hearing;  
4 whereas, these comments are directed to a  
5 regulatory change that occurred in 2016.  
6 I'm not seeing the purpose for which this  
7 will be properly offered.  
8 **MR. OLEEN:** I join in that to the  
9 extent that these are admitted to try to  
10 imply that opposition to a previous issue  
11 that was before DWR somehow equals  
12 opposition to this matter here.  
13 **PRESIDING OFFICER:** Response?  
14 **MR. STUCKY:** And I don't object.  
15 **MS. WENDLING:** The rules in place at  
16 the time that Phase I and Phase II were  
17 approved are very relevant to the ASR  
18 project as a whole. A change to those  
19 rules and regulations impacted those  
20 approvals in Phase I and Phase II and  
21 should -- it's very relevant to the matter  
22 here because we're now evaluating the ASR  
23 project under a new set of rules, and I  
24 believe the comments and concerns regarding  
25 that rule change are equally relevant to

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1 this matter.  
2 **PRESIDING OFFICER:** So these rule  
3 changes went into effect after Phase II was  
4 approved?  
5 **MS. WENDLING:** Correct.  
6 **MR. OLEEN:** I guess I would just --  
7 if the Intervenor's want to put forth  
8 written public comments in opposition to  
9 the proposal today, fine. But I don't --  
10 there is relevancy, admittedly, to the  
11 regulation change that was considered at  
12 this time because that's a regulation that  
13 is implicated under this proposal, yes,  
14 but -- but I don't think it's fair to say  
15 that everybody that objected to the reg --  
16 regulatory change back then are also  
17 objecting to the proposal now. They didn't  
18 have the proposal in front of them then,  
19 and so I think they're probably -- a lot of  
20 these people that objected back then, I  
21 think they probably have submitted public  
22 comments in opposition to this proposal,  
23 but then we can submit those comments, or  
24 they are already submitted before you and  
25 will be considered by you.

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1 **MR. STUCKY:** Can I speak to this?  
2 **PRESIDING OFFICER:** Yes.  
3 **MR. STUCKY:** I think that the  
4 position here is that these public comments  
5 are germane to this regulation change, and  
6 the City's proposal wouldn't even be before  
7 us today if it wasn't for this regulation  
8 change. And I think that the context of  
9 this is that we've had discussions about  
10 what happened back in 1993 and whether it  
11 was a concern back then and whether it's a  
12 concern now, we've had lots of testimony  
13 from Mr. Letourneau, from the City's  
14 experts as far as applying what we learned  
15 in the past to the proposal before us  
16 today.  
17 So I think that given the fact that this  
18 is directly germane to this proposal,  
19 because we couldn't have this proposal  
20 without this regulation change, although  
21 there may be limited relevance, as a  
22 hearing officer and someone that's trained  
23 as a lawyer, certainly you can sift through  
24 the level of relevance this has, and I  
25 think it should be admitted.

1 **PRESIDING OFFICER:** Are you offering  
2 this for the purpose of suggesting that  
3 everyone who objected to the regulation  
4 objects to this proposal today?

5 **MS. WENDLING:** No, I'm not. If you  
6 actually look through all the comments,  
7 you'll also see that some people speak in  
8 favor of the proposal -- the regulation  
9 change, and I am not saying those  
10 individuals speak in favor of this proposal  
11 either. I'm saying these were the thoughts  
12 at the time of this specific regulation.

13 **PRESIDING OFFICER:** Okay. I think  
14 I'm able to distinguish between the  
15 different levels of comment and the  
16 particular limited relevancy of this, and,  
17 again, the number of times so far I've  
18 erred on the side of a complete record,  
19 and I'm going to do that again now. So we  
20 will allow this exhibit.

21 **MS. WENDLING:** Okay.

22 **MR. OLEEN:** For the record, sorry to  
23 interrupt, Ms. Wendling, will this be  
24 Intervenors' Exhibit 1 or Intervenors'  
25 Exhibit 7?

1 **allow changes in the Wichita ASR that may be**  
2 **detrimental to the area, such concerns can only**  
3 **receive full and due consideration when the**  
4 **issue is ripe, that is in the context of a**  
5 **specific project proposal or request for change.**  
6 **If the new project or a change to the Wichita**  
7 **ASR project is proposed pursuant to these rule**  
8 **modifications, a full hearing will be held and a**  
9 **record of facts and concerns will be made and**  
10 **acted upon.**

11 Q. Do you understand this hearing that we're in  
12 today to be the type of hearing referred to in  
13 that statement?

14 **A. Well, I think we didn't anticipate this hearing**  
15 **to turn into a trial, I mean, I'll say that,**  
16 **but, yes, I mean, we knew that there would be an**  
17 **administrative hearing.**

18 Q. Okay. And at the time of this letter,  
19 March 8th, 2016, were -- was DWR aware of the  
20 City's desire to submit this proposal?

21 **A. Yes, I'm sure we were because of meetings that**  
22 **we'd been having, yes.**

23 Q. So the regulation change was made with awareness  
24 of the City's desired modification?

25 **A. Yes.**

1 **MS. WENDLING:** I'm going to go with  
2 7 so that they're easier to find.

3 **PRESIDING OFFICER:** Court reporter,  
4 are you tracking with that?

5 **THE REPORTER:** Yes, I am.

6 **PRESIDING OFFICER:** Thank you. So  
7 Intervenors' Exhibit 7 will be admitted.

8 **BY MR. STUCKY:**

9 Q. Now, can I have you turn in that same  
10 Intervenors' notebook to tab 21? And this is  
11 not in the notebook that has been provided. Can  
12 you read the second paragraph -- or, wait, can  
13 you tell me what this document is?

14 **PRESIDING OFFICER:** I'm terribly  
15 sorry, I was taking notes, where are we?

16 **MS. WENDLING:** Okay, 21, tab 21 in  
17 the Intervenors' binder.

18 **PRESIDING OFFICER:** Thank you.

19 **A. Okay. I -- this is a letter dated March 8th,**  
20 **2016 from Chief Engineer David Barfield to Equus**  
21 **Beds Groundwater Management District No. 2.**

22 **BY MS. WENDLING:**

23 Q. Now, can you read the second paragraph for me?

24 **A. While I have heard the Board's and others'**  
25 **concerns that the proposed rule change would**

1 Q. How often do you have -- how often do you need  
2 to have public hearings?  
3 **A. Any -- any rule modification, we have to have a**  
4 **public hearing; any local enhanced management**  
5 **area, we have a public hearing; any Intensive**  
6 **Groundwater Use Control Area, we have a public**  
7 **hearing; any new aquifer storage and recovery**  
8 **permits, we have to have a public hearing, I**  
9 **believe. But that's the ones that I'm aware**  
10 **that we have to have.**

11 Q. And if you were to estimate, do you know how  
12 many, approximately, public hearings you have in  
13 any given year?

14 **A. Oh, it's, like, one every five years maybe,**  
15 **two -- two every five years.**

16 Q. Oh, that few?

17 **A. Yeah.**

18 Q. How often does DWR have a position on the  
19 proposal or application prior to the public  
20 hearing?

21 **A. Some -- it de -- many times we do, I believe.**  
22 **I -- I'm -- the reason -- I'm thinking about**  
23 **each ones that we have. I know, like, some --**  
24 **yeah, I think we do have a position going into**  
25 **the hearing, I believe, if I understand your**

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1 **question.**  
 2 Q. What is the purpose of the public hearing if DWR  
 3 has already formed a position prior to the  
 4 public hearing?  
 5 **A. Well, if we -- when we go into these public**  
 6 **hearings and then we actually learn something**  
 7 **more, then we want to take into consideration**  
 8 **the things that we've learned in the public**  
 9 **hearing.**  
 10 Q. Okay. You've talked previously about the  
 11 Chinese walls that were put in place after it  
 12 was determined that this case was ready -- or  
 13 the matter was ready for a public hearing; is  
 14 that correct?  
 15 **A. That's correct.**  
 16 Q. If the Chinese walls were implemented after the  
 17 decision had already been made about the  
 18 reasonableness of the proposal, what has been  
 19 your role subsequent to the Chinese walls?  
 20 **A. Well, just to be the DWR lead person in this**  
 21 **process.**  
 22 Q. But no further analysis?  
 23 **A. No, no, no further analysis.**  
 24 Q. How -- how long do these Chinese walls stay in  
 25 place?

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1 **A. Until the order is issued, I believe. Until --**  
 2 **until -- I think until this order is issued and**  
 3 **becomes final, and that comes after the chief**  
 4 **engineer -- I know Madam Hearing Officer will**  
 5 **make a recommendation to the chief engineer,**  
 6 **then the chief engineer issues the final order,**  
 7 **and that's when I believe the Chinese walls are**  
 8 **down and we can talk about it.**  
 9 Q. Okay. So while the chief engineer is  
 10 considering the hearing officer's  
 11 recommendation, there will still be information  
 12 barriers?  
 13 **A. Yeah.**  
 14 Q. Chinese walls, I'm used to calling them. Now,  
 15 do they remain in place in the event there is an  
 16 appeal?  
 17 **A. Yes, because if there's an appeal, then the**  
 18 **order does not become final.**  
 19 Q. Okay.  
 20 **A. And so, yes, they're still there.**  
 21 Q. All right. And if it's brought to the Court  
 22 after an appeal to the secretary of ag, do the  
 23 barriers still remain in place?  
 24 **A. I don't know.**  
 25 **MR. OLEEN:** I object to this line of

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1 questioning because I think we're getting  
 2 into asking the witness about legal  
 3 matters --  
 4 **MS. WENDLING:** Withdrawn.  
 5 **MR. OLEEN:** -- about which I don't  
 6 think he's qualified to testify about how  
 7 long Chinese walls will be in place.  
 8 **BY MS. WENDLING:**  
 9 Q. In response to some of the errors and  
 10 discrepancies in the proposal, you said a few  
 11 times, well, that raises a question or that's  
 12 something to consider. In light of the public  
 13 hearing happening now and a recommendation  
 14 coming out of this hearing, how does that  
 15 consideration play a part in this process?  
 16 **A. Okay. What we would do, that proposal -- we**  
 17 **don't want to get multiple proposals out there,**  
 18 **that's really important because -- in my mind**  
 19 **because that would confuse things, so we would**  
 20 **make corrections to this proposal for us to**  
 21 **consider but keep the same proposal with a**  
 22 **correction and then initial and date.**  
 23 Q. Okay. But there's not a need for a subsequent  
 24 public hearing based on those subsequent  
 25 modifications?

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1 **A. I don't -- I don't believe so.**  
 2 Q. And you have mentioned, I think, in regard to  
 3 some of the testi -- or questions asked on  
 4 practical saturated thickness versus saturated  
 5 thickness by Mr. Stucky last time around that  
 6 further technical analysis might need to be  
 7 done; is that correct?  
 8 **A. Yeah, I think that those well logs definitely**  
 9 **raised a question to me, but I didn't review the**  
 10 **model, I didn't review the well logs. I do**  
 11 **know, from 10,000 feet, that the USGS model took**  
 12 **into account any well log data that's available,**  
 13 **but, yes, it would be worth looking at some**  
 14 **production wells in addition to the observation**  
 15 **wells.**  
 16 Q. And based on the Chinese walls that are in  
 17 place, you're limited to one technical resource  
 18 for that analysis?  
 19 **A. Right, correct. Well, we could do it, there's**  
 20 **two or three of us that could look at it.**  
 21 Q. Do you have any -- do you have an opinion on --  
 22 or any knowledge from the proposal whether or  
 23 not we know how the aquifer will recover from  
 24 the proposed -- I guess proposed pumping as  
 25 identified in tables 2-3 and 2-5 of this

1 proposal?  
2 **A. I don't have any modeling data or -- but**  
3 **real-world experience tells us that it recovers**  
4 **well because it's full, full or fairly full now.**  
5 **I don't know what the pumping was in '11 and**  
6 **'12, but, I mean, that's analysis that we could**  
7 **do to see what levels -- it was close to the '93**  
8 **level in '11 and '12 based on the conversations**  
9 **that we were having. And in seven years, six,**  
10 **seven years, the aquifer recovered.**  
11 Q. So from a two-year drought, it took six to  
12 seven years. Do you know when we're looking at  
13 an eight-year drought how that recovery time  
14 might compare?  
15 **A. I -- I don't know.**  
16 Q. Do you think that's reasonable to consider?  
17 **A. Yeah, I mean, I think -- yes, I think it's**  
18 **reasonable.**  
19 Q. When you're looking at the reasonableness of  
20 this proposal to lower the minimum index  
21 wells -- index level, sorry, does the  
22 availability of alternative sources of supply  
23 factor in on the reasonableness?  
24 **A. Not -- not on this one, it did not. What we**  
25 **looked at, Tessa, at the end of eight-year**

1 **five-year window; then we look at 2000 to 2009**  
2 **data, and that's in the statute, and the City --**  
3 **we'd have to rely on the 2000 and 2009 data, and**  
4 **the City had, I'll call it reduced use at that**  
5 **time. Plus when you look at a public water**  
6 **supply, they don't have the opportunity for**  
7 **flexibility with the reduced amount, they got**  
8 **health and public safety concerns that they have**  
9 **to deal with.**  
10 **So in our mind, a multi-year flex account**  
11 **did not work well for the City, or any city, not**  
12 **just Wichita but any city for that matter.**  
13 **Because they need -- they need the water on the**  
14 **front end, which they borrow from the back end,**  
15 **and a city does not have that luxury then to**  
16 **borrow.**  
17 Q. Okay. So would you say there -- the 2000 to  
18 2009 data, your flex account -- the flex account  
19 is based on usage during that period, not your  
20 authorized quantities?  
21 **A. That's correct.**  
22 Q. And that's based on this statute?  
23 **A. That's correct.**  
24 Q. And a statute could be changed?  
25 **A. Statutes can be changed, definitely. Actually,**

1 **drought, the aquifer was still 80 percent full,**  
2 **we considered that to be reasonable.**  
3 Q. Okay. When you say 80 percent full, can you  
4 elaborate on what that means?  
5 **A. Well, I mean the aquifer -- based on this**  
6 **proposal, the aquifer still has 80 percent of**  
7 **the saturated thickness remaining.**  
8 Q. And when we discussed the difference between  
9 practical saturated thickness and saturated  
10 thickness, meaning the potential for clay layers  
11 in some of that space, you're not considering  
12 those layers?  
13 **A. No.**  
14 Q. And 80 percent full doesn't mean that it's all  
15 water?  
16 **A. Yeah, 80 percent full -- well, no, I mean, the**  
17 **practical -- correct, it's layers of sand and**  
18 **gravel and clay.**  
19 Q. Okay. Regarding the multi-year flex accounts, I  
20 believe you said that you had looked at that for  
21 the City and it's not -- it's good for  
22 irrigators but not good for the City. How have  
23 you determined that it's not right for the City?  
24 **A. I need to remember everything about that, but it**  
25 **was a short planning period for the City, a**

1 **we just changed the multi -- we're working on**  
2 **changing the multi-year flex account statute**  
3 **this year to accommodate irrigators that have**  
4 **been approved after the 2009 by allowing a net**  
5 **irrigation requirement calculation, which**  
6 **doesn't work for a city, but it does work for an**  
7 **irrigator.**  
8 Q. But could be changed to work for the City?  
9 **A. Well, we'd have to -- we'd have to make -- we'd**  
10 **have to see if we could do that. I don't -- I**  
11 **don't know under what parameters yet.**  
12 Q. And a multi-year flex account is five years, but  
13 could you have two multi-year flex accounts back  
14 to back for a total of ten years?  
15 **A. Yes.**  
16 Q. A water right allows you the use of the water,  
17 but does it -- do you own that water?  
18 **A. You don't own the water, but you own the right**  
19 **to use the water.**  
20 Q. Okay. And do you have a guaranteed right to  
21 access that water?  
22 **A. Only if it's available.**  
23 Q. So if it's in a 1 percent drought and that water  
24 is not available, you don't have a guaranteed  
25 right?

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1 **A. That's correct.**  
 2 Q. Do you believe other water users in the basin  
 3 storage area are able to store their water in  
 4 the basin storage area, or is it exclusively  
 5 Wichita?  
 6 **A. No, the other water users have a right to Equus**  
 7 **Beds water.**  
 8 Q. Okay.  
 9 **A. The basin storage area is aquifer storage and**  
 10 **recovery.**  
 11 Q. Where is the basin storage area located?  
 12 **A. In the very top 120,000 acre-foot of the Equus**  
 13 **Beds.**  
 14 Q. And when was the basin storage area created?  
 15 **A. In Phase I.**  
 16 Q. And based on your understanding of Phase I, was  
 17 the basin storage area completely unsaturated,  
 18 it was -- there was 120,000 acre-feet  
 19 unsaturated in the Equus Beds?  
 20 **A. Well, at one time, in 1993, it was unsaturated,**  
 21 **I believe. I believe that was the lowest**  
 22 **portion of the aquifer at that time.**  
 23 Q. So it was unsaturated in '93 but not unsaturated  
 24 when Phase I was approved?  
 25 **A. That very well could be, yes.**

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1 Q. So what happened to that water that is in the  
 2 top 120,000 acre-feet, the Equus Beds water that  
 3 was in that 120,000 acre-feet?  
 4 **A. It was diverted by all water users.**  
 5 Q. How do you know that? If the water -- if it was  
 6 physically in the Equus Beds, because you said  
 7 it was not unsaturated at that point, meaning it  
 8 was saturated, the water was still sitting there  
 9 at the time that ASR Phase I was approved, and  
 10 just with a magic wand it converted to the basin  
 11 storage area?  
 12 **A. I guess I don't quite understand your question.**  
 13 **There -- there wasn't a magic wand or -- there**  
 14 **was -- there was a determination made at the '93**  
 15 **level that there was available storage area for**  
 16 **the ASR to operate.**  
 17 Q. Okay. All right. We'll move on. You mentioned  
 18 that permit conditions exist for all water  
 19 permits. And what is the purpose of those  
 20 permit conditions?  
 21 **A. To make sure folks comply with the conditions,**  
 22 **limitations, and terms of the water right.**  
 23 Q. Are permit conditions consistent for all water  
 24 permits?  
 25 **A. Consistent that everyone has permit conditions**

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1 **but we have -- there's unique permit conditions**  
 2 **depending on the uniqueness of a permit or a**  
 3 **water right.**  
 4 Q. Can you turn to tab 18 in this notebook?  
 5 **MS. WENDLING:** This is not in the  
 6 existing binder.  
 7 **BY MS. WENDLING:**  
 8 Q. Can you tell me what item 18 is?  
 9 **A. It's approval of application and permit to**  
 10 **proceed for application file number 46,627.**  
 11 Q. Is that in your 18? I believe that one's 17  
 12 unless I put them in the wrong one.  
 13 **A. I think I've got -- this is 18.**  
 14 Q. 18 and it's 46,627?  
 15 **A. 46,627. Did I say that wrong?**  
 16 Q. No. Can you then switch to 17? I might have  
 17 put yours backwards.  
 18 **A. Oh, I'm --**  
 19 Q. I'm looking for 46,714.  
 20 **A. Okay, here it is, I'm sorry. 46,71 -- this is**  
 21 **approval of application and permit to proceed**  
 22 **for 46,714.**  
 23 **MS. WENDLING:** And for clarity, I  
 24 believe these have been taken -- judicial  
 25 notice has been taken of the permits, so

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1 I'm not planning on introducing this, I  
 2 just wanted it here for us to look at.  
 3 **MR. OLEEN:** And that's fine,  
 4 Ms. Wendling. You handed me a permit for  
 5 46,627.  
 6 **MS. WENDLING:** Here's another one.  
 7 **BY MS. WENDLING:**  
 8 Q. Can you help me identify the permit conditions  
 9 for this 46,714?  
 10 **A. Well, the permit conditions are -- start at**  
 11 **number 1, I mean, the priority date; the second**  
 12 **condition is the place of use; third condition**  
 13 **is the authorized point of diversion; fourth**  
 14 **condition is the maximum rate.**  
 15 Q. So you would consider each one of these  
 16 enumerated items to be a permit condition?  
 17 **A. Yes.**  
 18 Q. And is it your understanding that DWR has the  
 19 authority to change any of these permit  
 20 conditions so long as it's not place of use --  
 21 the three things you said earlier?  
 22 **A. Right, yes. Correct.**  
 23 Q. And when you see the priority date on item  
 24 number 1, can you tell me what the significance  
 25 of that date is?

1 **A. Well, it -- the priority date is an attribute of**  
2 **a water right, and so that's the date that it's**  
3 **assigned, and that's when it gets its, basically**  
4 **its place in line for all other applications,**  
5 **water rights.**  
6 Q. All right. And if I said this was one of the  
7 multiple permits approved in Phase II, would all  
8 of the permits in Phase II have this same  
9 priority date?  
10 **A. Depends on the date that they were filed, I'm**  
11 **not quite sure. If they were filed all in the**  
12 **same day, then, yes, they would have the same**  
13 **priority date.**  
14 Q. And in terms of an impairment proceeding, anyone  
15 with a water right prior to February 12th, 2007  
16 would have a priority over this appropriation  
17 right?  
18 **A. That's correct.**  
19 Q. In the -- when looking at -- and there's a --  
20 let's see. Number 6, is that the perfection  
21 period?  
22 **A. Yes.**  
23 Q. As we contemplate the AMCs, how -- what is the  
24 perfection period for an AMC, or how is an AMC  
25 perfected?

1 perfection for credits?  
2 **A. Yes. They're under -- that's this, you have to**  
3 **perfect the credit, and then you have to perfect**  
4 **them for municipal use by putting them to**  
5 **beneficial use.**  
6 **PRESIDING OFFICER:** So are there two  
7 different --  
8 **A. Yes.**  
9 **PRESIDING OFFICER:** -- perfections?  
10 **A. Yes.**  
11 **PRESIDING OFFICER:** They're not  
12 combine them into one?  
13 **A. No, I don't believe so. They're two different**  
14 **authorities.**  
15 **PRESIDING OFFICER:** Okay.  
16 **A. There's an authority to accumulate and an**  
17 **authority to use.**  
18 **PRESIDING OFFICER:** So the ultimate  
19 certificate would reflect two different  
20 perfections?  
21 **A. There's two certificates. It would be a**  
22 **certificate for the, I believe -- you know what,**  
23 **I got to think about this a little bit.**  
24 **PRESIDING OFFICER:** Okay.  
25 **A. So I'm kind of looking at Doug -- Doug Schemm,**

1 **A. Well, an AMC would be perfected by accumulating**  
2 **them in the basin storage area, I mean, that's**  
3 **how they're perfected.**  
4 Q. Okay. Accumulation, not use?  
5 **A. Correct. I believe so. Well, you know, I need**  
6 **to think about that a little bit. I think -- so**  
7 **the -- the ASR, the recharge credit of that**  
8 **would be perfected under accumulation, but the**  
9 **use of the recharge credit would be actual use.**  
10 **Under municipal use. The 19,000 used would have**  
11 **to be perfected.**  
12 Q. Okay.  
13 **A. So --**  
14 **PRESIDING OFFICER:** I am confused.  
15 **A. Okay. It is complicated. So there's authority**  
16 **for artificial recharge, and to perfect**  
17 **artificial recharge, you would have to**  
18 **accumulate the artificial recharge credits.**  
19 **This is what I believe just setting here in the**  
20 **hot seat. Then, though, to perfect the recharge**  
21 **credits for municipal purposes under that, it's**  
22 **a different permit, and you would actually have**  
23 **to perfect those by actually putting those to**  
24 **beneficial use.**  
25 **PRESIDING OFFICER:** So you have

1 **so they -- they accumulate the credit, but then**  
2 **they have to use it so they have to -- I'm even**  
3 **looking at Tim. I'd have to think about this a**  
4 **little bit.**  
5 **MS. WENDLING:** I was going to say  
6 it's close to 1:00, do we want to break and  
7 he can think about it?  
8 **PRESIDING OFFICER:** Might be a good  
9 time for a break.  
10 **A. Yeah I got to think about this.**  
11 **PRESIDING OFFICER:** Might be a good  
12 time.  
13 **A. Yeah, I got to ask one of the team folks.**  
14 **PRESIDING OFFICER:** All right.  
15 Well, we've gotten up to almost 1:00  
16 o'clock, let's take a break until 2:00.  
17 Thank you.  
18 (Thereupon, a lunch recess was  
19 taken; whereupon the following was  
20 had.)  
21 **PRESIDING OFFICER:** Okay. We're now  
22 back on the record, it is 1:55. And,  
23 Ms. Wendling.  
24 **BY MS. WENDLING:**  
25 Q. Before the break, we were talking about



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1   perfections for recharge credits, and you were  
2   going to think about that over lunch. Have you  
3   any more information on how recharge credits are  
4   perfected?  
5   **A. Yes, absolutely. So let's look at the permit**  
6   **for 46,267 (sic), that particular permit has two**  
7   **beneficial uses of water. So that's surface**  
8   **water diversion from the Little Ark. So if**  
9   **water is diverted and that water becomes treated**  
10  **and becomes a recharge credit, then that is**  
11  **perfected for the artificial recharge portion of**  
12  **that recharge credit. If water is diverted from**  
13  **that particular permit, though, and taken**  
14  **directly to town, that is then perfected for**  
15  **municipal use.**  
16   **So -- now then there was much discussion,**  
17  **then, about 46,714, water -- what rights are**  
18  **perfected based on use? And so for the City,**  
19  **then, to perfect a recharge credit as municipal**  
20  **use, they would have to recover that and then**  
21  **use it for municipal use. Under a different --**  
22  **that's a different authority. For the hearing**  
23  **officer, these are two separate permits --**  
24   **PRESIDING OFFICER: Okay.**  
25  **A. -- okay? So the initial permit that I talked**

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1   **about, 46,627 --**  
2   **PRESIDING OFFICER: Okay.**  
3   **A. -- that's the dual use, which is artificial**  
4   **recharge, that's the accumulation of credits;**  
5   **the minute they accumulate a credit, it's**  
6   **perfected for that part. But then there's a**  
7   **dual use on that to where they can take surface**  
8   **water directly to town, not related to the**  
9   **recharge. And so that particular use, when used**  
10  **for municipal use only, can be perfected for**  
11  **municipal use. It's paragraph number 2 there,**  
12  **the first sentence there talks -- shall be used**  
13  **for both artificial recharge in the area and for**  
14  **municipal use. I can see a question is why**  
15  **I'm --**  
16   **PRESIDING OFFICER: Yes.**  
17  **A. -- I want to be very, very clear with this.**  
18   **PRESIDING OFFICER: So under 46,627**  
19   **as it currently stands, water still has to**  
20   **be physically injected for subsequent**  
21   **withdrawal, and that creates the credits?**  
22  **A. Correct.**  
23   **PRESIDING OFFICER: So the**  
24   **municipal, I think you said if it's**  
25   **diverted and taken directly to town --**

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1   **A. Correct, that's not related to the ASR at all.**  
2   **That is just stand-alone surface water.**  
3   **PRESIDING OFFICER: So that's**  
4   **authorized under 46,627 as well?**  
5   **A. Correct.**  
6   **PRESIDING OFFICER: So that one**  
7   **permit allows direct surface diversion as**  
8   **well as --**  
9   **A. Artificial recharge.**  
10  **PRESIDING OFFICER: -- aquifer**  
11  **storage?**  
12  **A. Correct. And to be very clear, it's -- the**  
13  **beneficial uses are artificial recharge and**  
14  **municipal.**  
15   **PRESIDING OFFICER: And so**  
16   **perfection of artificial recharge occurs at**  
17   **the point the credit is accumulated?**  
18  **A. Correct.**  
19   **PRESIDING OFFICER: So is there any**  
20   **perfection that occurs when water has been**  
21   **physically stored under the ASR and**  
22   **subsequently withdrawn and recovered, does**  
23   **the act of withdrawing and recovery perfect**  
24   **anything?**  
25  **A. And that's the second authority, that is under**

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1   **file number 46,714. So there's two -- there's**  
2   **two levels of perfection here, there's two**  
3   **perfections that have to take place for the**  
4   **recharge credit, the perfection of accumulation**  
5   **and then the perfection of use. And those are**  
6   **under two separate authorities.**  
7   **PRESIDING OFFICER: So those perfect**  
8   **two separate authorizations?**  
9   **A. Correct.**  
10  **PRESIDING OFFICER: Okay. So a**  
11  **certificate would be ultimately issued for**  
12  **46,714 for municipal use based on the water**  
13  **recovered from storage and used for**  
14  **municipal use?**  
15  **A. Yes, that's my understanding.**  
16   **PRESIDING OFFICER: The certificate**  
17   **for 46,627, would there be two certificates**  
18   **or a single certificate with two different**  
19   **descriptions of perfection?**  
20  **A. A single certificate with two beneficial uses,**  
21  **quantifying it -- we call them dual use, but**  
22  **this would be a single certificate under 46,627,**  
23  **with a quantity for artificial recharge and a**  
24  **quantity for municipal.**  
25   **PRESIDING OFFICER: Thank you.**

1 Excuse me for a minute while I take notes,  
2 I don't want to lose this. Okay, thank  
3 you.  
4 **BY MS. WENDLING:**  
5 Q. You mentioned for 46,227 (sic) the dual use, the  
6 two certificates, is there a certificate -- when  
7 you add the two certificates together, are they  
8 capped at the 45,000 acre-feet? In item  
9 number 5? Or can it be 45,000 for each use?  
10 **A. It -- they -- they both are capped at 45,230**  
11 **acre-feet.**  
12 Q. So the City could use 45,000 acre-feet to town  
13 for immediate municipal use and 45,000 acre-feet  
14 for recharge?  
15 **A. Based on my -- yes, based on the quick review of**  
16 **this permit, that's correct.**  
17 Q. Okay. And if we back up just a little bit,  
18 these two permits that I gave you, are they part  
19 of the Phase II approval --  
20 **A. I believe so.**  
21 Q. -- ASR Phase II approval?  
22 **A. I believe so, yes.**  
23 Q. If we quickly look at GMD Exhibit 28 in their  
24 second Volume II binder.  
25 **A. Yes.**

1 **groundwater from the Equus Beds Aquifer, except**  
2 **for recovery of water recharged pursuant to the**  
3 **approved Aquifer Storage and Recovery Project,**  
4 **and any subsequent modifications, in excess of**  
5 **the amount approved herein nor in excess of the**  
6 **amount found by the chief engineer to have been**  
7 **actually used for the approved purpose during**  
8 **one calendar year subsequent to approval of the**  
9 **application and within the time specified for**  
10 **perfection or any authorized extension thereof.**  
11 Q. So --  
12 **A. Is that slow enough?**  
13 Q. Does this mean within the perfection period the  
14 City would need to withdraw their recharge  
15 credits in order to perfect them?  
16 **A. Yes.**  
17 Q. Do you -- will AMCs have a similar perfection  
18 concept in that they would also need to be  
19 withdrawn and used for municipal use during the  
20 perfection period?  
21 **A. Yeah, they're a recharge credit, so yes.**  
22 Q. Now, moving on to the -- we heard about  
23 challenges associated with artificial recharge,  
24 and that's the need for the City submitting this  
25 proposal; is that correct?

1 Q. And Exhibit 28 is the Phase II ASR approval?  
2 **A. Yes.**  
3 Q. If you go to page 9, can you tell me what is on  
4 page 9?  
5 **A. It is the list of attachments to the order.**  
6 Q. And the first -- or attachments 2 and 3, can you  
7 tell us what those are?  
8 **A. Correct, yes.**  
9 Q. Those -- the two sample permits we've just been  
10 discussing, there's actually several more of  
11 those permits with -- associated with Phase II?  
12 **A. Yes.**  
13 Q. And earlier when you were talking about the  
14 19,000 or 19,500 in authorized recharge credits  
15 for the City's use, is that what happens if you  
16 add up items 3 through 26 roughly?  
17 **A. That I don't know.**  
18 Q. Okay. Okay. So going back to permit 46,714,  
19 can you find item number 7 on the second page?  
20 **A. Okay.**  
21 Q. Can you read the first two lines for me?  
22 **A. In item 7?**  
23 Q. Yep.  
24 **A. Okay. That the applicant shall not be deemed to**  
25 **have acquired a water appropriation for**

1 **A. No, I don't understand that.**  
2 Q. Okay. The City is not currently able to  
3 accumulate recharge credits because the aquifer  
4 is full. Is that your understanding?  
5 **A. Yeah, they -- well, but the GMD showed me where**  
6 **the aquifer is at a level that they can**  
7 **accumulate some physical recharge credits. The**  
8 **City wants to manage the aquifer full, but they**  
9 **can pump the hole to create the space for**  
10 **physical recharge credit.**  
11 Q. Do you believe it's easy for the City to  
12 accumulate physical recharge credits?  
13 **A. I think so, if the hole is -- if the space in**  
14 **the aquifer is there, I think the City's got the**  
15 **capability to accumulate physical recharge**  
16 **credits.**  
17 Q. And in the past ten years, do you know how many  
18 recharge credits the City's accumulated?  
19 **A. I think -- no, not specifically, but I've heard**  
20 **6 to 7,000 acre-feet.**  
21 Q. And is it your understanding the aquifer has  
22 been full the entire time that Phase II has been  
23 in operation?  
24 **A. I -- I don't know.**  
25 Q. When the -- we discussed impairments, you -- and

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1 the 1993 levels, one of the statements you made  
 2 is that you were not aware of any issues  
 3 reported in 1993; is that correct?  
 4 **A. That's correct.**  
 5 Q. The 1993 levels used as the minimum index  
 6 levels, are those taken from first quarter of  
 7 '93, sometime in the January through March 1993  
 8 time frame?  
 9 **A. I believe so, yes.**  
 10 Q. So the -- those levels, then, represent what  
 11 happened in 1992 rather than what would happen  
 12 in the future; is that correct?  
 13 **A. Well, it happened in all of the years coming up**  
 14 **to 1992.**  
 15 Q. Okay. And do you recall if 1992 was a wet year?  
 16 **A. I don't, I don't recall.**  
 17 Q. If you would find the black binder from the City  
 18 which contains the proposal. And we're going to  
 19 go to attachment F of the proposal. This is a  
 20 single page, and it's an annual and seasonal  
 21 total PDSI comparison.  
 22 **A. Is it back in the book, Tessa, is it --**  
 23 Q. Yes.  
 24 **A. Okay.**  
 25 Q. So there's a -- behind the proposal there's a

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1 tab that says attachments F through J.  
 2 **A. Okay.**  
 3 Q. And it should be the first page behind that.  
 4 **A. Okay.**  
 5 Q. And if you look about midway down the table,  
 6 you'll see years, and what I'm looking at are  
 7 the years of 1991, '92, and '93 --  
 8 **A. Okay.**  
 9 Q. -- on the right-hand column. Can you read the  
 10 annual PDSI numbers for 1991, '92, and '93?  
 11 **A. The -- is it the annual number that you want?**  
 12 Q. Yeah, we'll use the annual number.  
 13 **A. So 1991 is a minus 30.85; '92 is a 5.03; '93 is**  
 14 **a 49.15.**  
 15 Q. And we've learned a lot about PDSI numbers  
 16 throughout this hearing. Based on that  
 17 information, would you say that 1993 was wetter  
 18 than '91 and '92?  
 19 **A. Yes.**  
 20 Q. So would you need to actually look at complaints  
 21 during '91 and '92 to see if there were -- was  
 22 potential impairment?  
 23 **A. That's a good point, we didn't have any**  
 24 **complaints then either, but it's a good thing to**  
 25 **bring up.**

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1 Q. Have you participated in many impairment  
 2 proceedings?  
 3 **A. The few that we've had, yes.**  
 4 Q. Okay. And what is DWR's role in an impairment  
 5 proceeding?  
 6 **A. Well, we administer water rights, and so we make**  
 7 **a determination if impairment actually occurs,**  
 8 **and we've even written rules on how to**  
 9 **investigate an impairment. And surface water we**  
 10 **do quite often when it gets dry, but we do have**  
 11 **a few groundwater impairment complaints. And so**  
 12 **if -- if impairment is found, it's our role to**  
 13 **curtail the junior pumping until the senior**  
 14 **pumping is satisfied.**  
 15 Q. Does impairment occur when the complaint is made  
 16 or when it's been evidenced that the junior  
 17 right holder is actually causing impairment?  
 18 **A. Well, an impairment complaint can be made, but**  
 19 **then we do -- we study it to make a**  
 20 **determination that impairment is actually**  
 21 **occurring.**  
 22 Q. Okay. And you don't curtail use until you've  
 23 determined that the impairment is occurring?  
 24 **A. That's correct, because we do get folks claiming**  
 25 **impairment when they're not being impaired.**

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1 Q. Okay. How long does the investigation take DWR  
 2 to perform to determine whether or not there is  
 3 impairment?  
 4 **A. Surface water, it's pretty real time, I mean, we**  
 5 **can make a determination quickly. In a**  
 6 **groundwater situation, we actually have to look**  
 7 **at pumping and recovery so we can determine the**  
 8 **well-to-well impact. So we're getting better at**  
 9 **them. It depends on when in the season, but it**  
 10 **can take a season to make that determination.**  
 11 Q. And I believe you recalled during the discovery  
 12 stage, I asked about the -- what DWR had done to  
 13 evaluate impairment, and response was DWR  
 14 determines the potential for impairment upon the  
 15 submission of an application; no ASR related  
 16 permit applications from Wichita are before DWR  
 17 at this time. Does that sound like what the  
 18 response would have been?  
 19 **A. Well, okay, so you're asking if we would make a**  
 20 **determination of impairment would occur if we**  
 21 **received a new application?**  
 22 Q. I had asked what DWR had done with regard to  
 23 impairment in this proposal.  
 24 **A. Okay.**  
 25 Q. And I interpreted your response as we didn't

1 look at impairment for this proposal because  
2 it's not a new or change application?  
3 **A. Okay. We didn't look at impairment related to a**  
4 **new application or a change, but then we did**  
5 **look at the table with the aquifer still**  
6 **80 percent full at the end of eight years of a**  
7 **1 percent drought, we didn't feel that**  
8 **impairment would occur.**  
9 Q. Okay. When you say the aquifer is 80 percent  
10 full, that sounds like a lot of water given the  
11 size of the aquifer. Is that your  
12 understanding?  
13 **A. Yes.**  
14 Q. If -- and is it also your understanding that the  
15 area is over-appropriated and new applications  
16 within the Equus Beds well field are not being  
17 approved?  
18 **A. Correct.**  
19 Q. So if there's all that water, why are we not  
20 appropriating it to others for beneficial use?  
21 **A. Well, because the area is beyond what's**  
22 **considered safe yield for that particular**  
23 **aquifer.**  
24 Q. And who determines safe yield?  
25 **A. Well, it's in our rules. We use the GMD**

1 **A. Okay.**  
2 Q. We also discussed a letter that was written by  
3 the chief engineer, DWR Exhibit 4, in September  
4 of '17, if you want to look at it, addressing --  
5 believing that the model was sufficient. Do you  
6 recall discussing that letter?  
7 **A. Yes.**  
8 Q. We talked about two different models throughout  
9 this hearing, MODSIM and MODFLOW. Do you know  
10 which model that letter was referring to?  
11 **A. No. I believe it'd be the MODFLOW, but I'm not**  
12 **sure. Again, I'm not the modeler.**  
13 Q. Okay. Do you know if DWR looked at both models  
14 or if they only looked at one of the two?  
15 **A. I don't -- I'm not sure.**  
16 Q. With regard to the permits allowing the  
17 withdrawal or recovery of 19,000 acre-feet, that  
18 number is not limited if the City submits new  
19 applications or further applications; is that  
20 correct?  
21 **A. That's correct.**  
22 Q. In any analysis, have you seen, either by the  
23 City, Burns & McDonnell, or DWR, contemplation  
24 of that number being increased beyond 19,000?  
25 **A. At one time, there were some new applications**

1 **numbers, and I believe -- I'd have to review it,**  
2 **but I'm sure it's 6 inches of recharge in a**  
3 **two-mile circle. So -- which would be, well,**  
4 **2640 -- 2,640 acre-feet available in a two-mile**  
5 **circle. I think.**  
6 Q. So there's a significant amount of water because  
7 the aquifer is 80 percent full but not enough  
8 water to appropriate for beneficial use?  
9 **A. That's correct.**  
10 Q. And the permit similar to 46,714 and other  
11 permits attached to ASR Phase II, which we just  
12 looked at, what was the minimum index level  
13 attached to those permits?  
14 **A. Let me see. Do you know where they are in here,**  
15 **Tessa?**  
16 Q. Well, you can either look at -- in Intervenor's  
17 notebook, Number 18, or 28 --  
18 **A. Okay.**  
19 Q. -- in the GMD notebook, which is the Phase II.  
20 These would be the current minimum index levels.  
21 **A. They're in every -- can you point me to a**  
22 **paragraph so I don't have to read the whole**  
23 **thing?**  
24 Q. I'll just move on, I'm sure it's covered in  
25 something.

1 **filed to increase it to, I believe, 30, but then**  
2 **the City requested that those applications be**  
3 **withdrawn.**  
4 Q. And the proposal before us is, and the modeling  
5 associated with that proposal, is based on a  
6 19,000 limit?  
7 **A. Correct.**  
8 Q. You had previously said regarding water quality  
9 that because no changes were being made to Phase  
10 I you didn't have any water quality concerns.  
11 Can you elaborate why only changes to Phase I  
12 would give rise to water quality?  
13 **A. Well, can you ask the last part of that, Tessa,**  
14 **I'm sorry?**  
15 Q. Why do you believe that only changes to Phase I  
16 of the ASR project would cause -- could cause  
17 water quality issues but not changes to Phase  
18 II?  
19 **A. Okay, just the geographic location of Phase I to**  
20 **hold back the salt plume barrier. And there's**  
21 **no -- there's always water quality concerns, but**  
22 **there's no additional water quality concerns**  
23 **based on these potential modifications.**  
24 Q. So you don't believe there's any water quality  
25 implications to lowering the Equus Beds to the

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1 newly proposed minimum index levels?  
 2 **A. We don't -- we don't believe so.**  
 3 Q. Okay. And Phase I is dealing with the Burrton  
 4 chloride plume, correct?  
 5 **A. Correct.**  
 6 Q. And if we don't change Phase I, we'll have that  
 7 barrier, is that your general understanding?  
 8 **A. Yeah, I don't know how well the barrier is**  
 9 **working, but correct, that's right.**  
 10 Q. Now, is there also chloride contamination from  
 11 the Arkansas River?  
 12 **A. Yes.**  
 13 Q. And we do not have a barrier to prevent that  
 14 chloride from moving into the Equus Beds, is  
 15 that your understanding?  
 16 **A. That's my understanding.**  
 17 Q. But you don't think lowering the minimum index  
 18 levels in that area could impact the chloride  
 19 migration from the Arkansas River?  
 20 **A. I don't -- I don't think -- the lowering wasn't**  
 21 **significant enough that I believe that there**  
 22 **would be an impact.**  
 23 Q. Okay. I attempted this earlier, and I didn't  
 24 convey -- communicate it well, the basin storage  
 25 area is 120,000 acre-feet, correct?

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1 **A. Correct.**  
 2 Q. And the City has approximately 6,000 acre-feet  
 3 in recharge credits?  
 4 **A. I think so.**  
 5 Q. So what else is -- as we sit here today, what  
 6 else is in the basin storage area?  
 7 **A. Well, okay, whether it's Equus Beds or basin**  
 8 **storage area, that's all about accounting, okay,**  
 9 **whatever we call it, it's about accounting. So,**  
 10 **currently, if the water level is full, then the**  
 11 **Equus Beds water is in that particular space.**  
 12 Q. Okay.  
 13 **A. Okay. So -- and if somebody is pulling water**  
 14 **from that particular space, other than a**  
 15 **recharge credit, they're pumping Equus Beds**  
 16 **water.**  
 17 Q. All right. So even though the basin storage  
 18 area sits below many water right holders in this  
 19 area, when they use their water appropriation  
 20 rights, those water users are using Equus Beds  
 21 water, and the City well potentially next -- you  
 22 know, a little ways down would -- could use  
 23 either Equus Beds water or basin storage area  
 24 water?  
 25 **A. That's correct.**

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1 Q. If we turn to GMD2 Exhibit 26, which is also in  
 2 Volume II, on page 12, if you look at conclusion  
 3 number 13.  
 4 **A. Okay.**  
 5 Q. And can you read 13 for all of us?  
 6 **A. That if the project is operated so that recharge**  
 7 **credits cannot be withdrawn if the static water**  
 8 **level in the index well is below the lowest**  
 9 **index water level for that index well, the**  
 10 **public interest in not diverting Equus Beds**  
 11 **water will be protected.**  
 12 Q. Can you -- what do you believe is meant by not  
 13 diverting Equus Beds groundwater?  
 14 **A. Well, if the low -- the lowest index water level**  
 15 **is Equus Beds water.**  
 16 Q. Below that?  
 17 **A. Below that.**  
 18 Q. Anything below the minimum index level?  
 19 **A. Is Equus Beds water. And so the project, when**  
 20 **operated, recharge credits cannot be drawn below**  
 21 **that index well; therefore, the recharge credits**  
 22 **are not diverted from the Equus Beds.**  
 23 Q. Okay. So at the time this was approved, the  
 24 index levels were the 1993 levels, and you're  
 25 saying anything below the index levels, meaning

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1 the 1993 levels, is Equus Beds water. Am I  
 2 understanding you correctly?  
 3 **A. That's correct.**  
 4 Q. So if anything below the 1993 levels is Equus  
 5 Beds water, when we allow the City to go below  
 6 those '93 levels, is the City not withdrawing  
 7 Equus Beds water?  
 8 **A. If this -- if this proposal is approved, then**  
 9 **the minimum index water level will be lowered,**  
 10 **and that's basin storage area then.**  
 11 Q. Oh. So upon approval of the City's proposal,  
 12 the difference between the current minimum index  
 13 levels and the new minimum index levels, all  
 14 that water in that area is converted from Equus  
 15 Beds water to basin storage area water?  
 16 **A. Well, no, it -- it moves that index level down,**  
 17 **then the City then would have the ability to put**  
 18 **recharge credits into that area. Now, an AMC**  
 19 **would convert Equus Beds to a recharge credit,**  
 20 **but a physical recharge credit is still a**  
 21 **physical recharge credit.**  
 22 Q. But when the aquifer is full, you can't put  
 23 water in that space?  
 24 **A. No, not physical water, you cannot.**  
 25 Q. We've talked a lot about leaving water in the

1 aquifer and the City leaving water in the  
2 aquifer to earn AMCs. Is the water in that  
3 context left in the aquifer a portion of their  
4 what we call native water rights?

5 **A. Yes, they -- they would have to divert their  
6 native water right to create the hole in the  
7 aquifer.**

8 Q. I'm talking -- I actually was talking about the  
9 opposite. I want to leave the water in the  
10 aquifer, not -- we're not on the hole side. So  
11 we talked about the City earning credits for  
12 leaving water in the aquifer, are you with me?

13 **A. Yep. Yep.**

14 Q. So what water does the City leave in the  
15 aquifer?

16 **A. It would be their native water right or any  
17 re -- any accumulated recharge credit.**

18 Q. Okay. So is the amount of AMCs that the City  
19 can accumulate limited by the quantity of native  
20 water rights and any available recharge credit  
21 since they get a -- it's an offset of what they  
22 could have pumped?

23 **A. Not at this point.**

24 Q. Okay. So even though today the City would have  
25 the ability to withdraw roughly 46,000

1 Q. Okay. Do you see findings 12 and 13?

2 **A. Yes.**

3 Q. I read findings 12 and 13 to protect domestic  
4 well owners; is that correct?

5 **A. Yes, that's correct.**

6 Q. And when I read through these proposed permit  
7 conditions, I haven't found something that  
8 similarly offers those benefits to a -- an  
9 irrigator water permit holder or someone with a  
10 stock watering permit or another municipality in  
11 the area. Am I correct in reading those to be  
12 limited to domestic wells?

13 **A. Yes.**

14 Q. Okay.

15 **A. But please note, though, that this is still a  
16 draft and other things can be considered. But  
17 right now as written, it was to protect domestic  
18 well owners within the spacing requirements.**

19 Q. Okay. And one of the remedies proposed in  
20 previous permit conditions, or even in these, is  
21 the possibility of a home water treatment  
22 system?

23 **A. Yeah, I think -- I think anything's on the  
24 table.**

25 Q. If the impairment or impact caused to other

1 acre-feet, by leaving that water in and earning  
2 AMCs, they could actually earn 80,000 in AMCs?  
3 It's not based at all on their water rights left  
4 in the aquifer?

5 **A. That's correct.**

6 Q. Earlier today we talked about water use  
7 reporting and that the use reported is generally  
8 less than the authorized amount?

9 **A. Correct.**

10 Q. So that would imply that those users are also  
11 leaving water in the aquifer; is that correct?

12 **A. That's correct.**

13 Q. And do they receive any type of credit for what  
14 they leave in the aquifer?

15 **A. No. But they're not part of an aquifer storage  
16 and recovery.**

17 Q. You might have a lot more applications after  
18 this.

19 Switching gears to the proposed permit  
20 conditions that we talked about, I believe now  
21 this would be -- I think it's DWR Exhibit  
22 Number 1 where they talk about proposed permit  
23 conditions. And this is the proposed findings,  
24 be about page 6 maybe of that.

25 **A. I'm on -- I'm on page 6.**

1 water users in the Equus Beds is chloride  
2 contamination where a home treatment system  
3 doesn't necessarily solve that, especially if  
4 you're irrigating, have you seen anything  
5 proposed to deal with that type of potential  
6 impact?

7 **A. No.**

8 Q. It's also been said throughout the course of  
9 these proceedings that the City would be forced  
10 to make a hole in the aquifer, as you started to  
11 talk about earlier; is that correct?

12 **A. They would have to create a hole to generate  
13 recharge credits; to be able to accumulate  
14 recharge credits, they'd have to lower the  
15 aquifer.**

16 Q. Is pumping a hole in the aquifer the City's only  
17 option to obtain a water supply needed?

18 **A. The only option to obtain a water supply, is  
19 that ...**

20 Q. Yes.

21 **A. It's the option to create recharge credits.**

22 Q. But if the City needs additional water supply,  
23 they would potentially have other options?

24 **A. Oh, sure. I understand now, thanks.**

25 Q. Does -- has DWR issued or contemplated issuing

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1 an order requiring the City to pump a hole in  
 2 the aquifer?  
 3 **A. No, I mean, that's -- that's how ASR is**  
 4 **currently approved, we would not have to issue**  
 5 **an order to do that.**  
 6 Q. Okay. So is it the City's decision whether or  
 7 not they pump a hole in the aquifer?  
 8 **A. Yes, it's based on their management decisions.**  
 9 Q. Did the ASR Phase I or II guarantee the City a  
 10 specified amount of recharge credits?  
 11 **A. No, it placed no limit on it.**  
 12 Q. Okay. Did it guarantee that within ten years  
 13 the City would have enough recharge credits to  
 14 meet their supply needs?  
 15 **A. No.**  
 16 Q. So in this context, it's actually the City's  
 17 decision to pump a hole in the aquifer, they're  
 18 not required to do it; is that correct?  
 19 **A. That's correct.**  
 20 Q. Are you familiar with the Burrton IGUCA?  
 21 **A. Yes.**  
 22 Q. Can you briefly describe what an IGUCA is?  
 23 **A. An IGUCA is an Intensive Groundwater Use Control**  
 24 **Area.**  
 25 Q. And why is -- do you know why we have the IGUCA

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1 for Burrton?  
 2 **A. Because of water quality and it lays out**  
 3 **corrective controls that provides the GMD the**  
 4 **opportunity for an additional study to see if**  
 5 **new appropriations are available.**  
 6 Q. Okay. In the Intervenor's notebook, can you  
 7 find tab number 6?  
 8 **A. Okay.**  
 9 Q. In the -- well, can you tell me what this  
 10 document is?  
 11 **A. This document is a letter dated October 4th,**  
 12 **2016 from the City of Wichita, Alan King, to our**  
 13 **agency, in care of David Barfield, chief**  
 14 **engineer.**  
 15 Q. Have you seen this letter before?  
 16 **A. Not until today.**  
 17 Q. Okay. Can you read the first two sentences of  
 18 the third paragraph for us?  
 19 **A. For the record, this -- we did the Burrton IGUCA**  
 20 **review, and this is a letter commenting on that**  
 21 **particular IGUCA review. And the sentences that**  
 22 **Tessa wants me to read is, the City of Wichita**  
 23 **supports the continuation of the IGUCA as long**  
 24 **as the IGUCA does not limit the City's ability**  
 25 **to withdraw water from any of its wells,**

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1 **including recharge credits. Further, the City**  
 2 **would be a proponent of expanding the IGUCA**  
 3 **boundary to include the ASR Phase I wells if the**  
 4 **IGUCA guaranteed the City could transfer the**  
 5 **point of withdrawal of recharge credits from any**  
 6 **of the IGUCA-affected wells to other city wells.**  
 7 Q. What do you believe is meant by transferring the  
 8 point of withdrawal of recharge credits?  
 9 **MR. OLEEN:** I kind of want to object  
 10 because the witness has said he's never  
 11 seen this letter before, he didn't write  
 12 this letter before, I feel like this is  
 13 kind of a sandbagging of my witness, and  
 14 these questions should have been asked of  
 15 the Wichita officials when they were on the  
 16 stand. I don't think he's qualified to  
 17 answer that question is my official  
 18 objection.  
 19 **PRESIDING OFFICER:** Your response?  
 20 **MS. WENDLING:** I believe in his  
 21 position he would have been involved in  
 22 reviewing the IGUCA and able to give, in  
 23 his experience, what it would mean to  
 24 transfer the point of withdrawal for the  
 25 research credits.

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1 **PRESIDING OFFICER:** So perhaps you  
 2 could ask that way instead of what was the  
 3 City requesting.  
 4 **MS. WENDLING:** Okay.  
 5 **PRESIDING OFFICER:** Instead of what  
 6 was the City's intent.  
 7 **MS. WENDLING:** Okay.  
 8 **BY MS. WENDLING:**  
 9 Q. What do you understand the City was requesting  
 10 by asking to transfer the point of withdrawal of  
 11 recharge credits?  
 12 **A. Well, to help, in my position, it was another**  
 13 **team, the water management team who's Chinese**  
 14 **walled off that did --**  
 15 Q. Okay.  
 16 **A. -- the Burrton IGUCA review and the McPherson**  
 17 **IGUCA review, and so -- but what I see there is**  
 18 **to transfer the water use from close to the salt**  
 19 **plume, leave that water there, and gain that**  
 20 **authority farther away from the salt plume,**  
 21 **that's how I read that.**  
 22 Q. Okay. If the ability to withdraw recharge  
 23 credits is transferred, would that allow  
 24 additional withdrawals at locations outside of  
 25 the IGUCA?

1 **A. Yes, it could.**  
2 Q. To your knowledge, has that been contemplated in  
3 any of the analysis?  
4 **A. We haven't given it -- we -- we've not -- we've**  
5 **not done any study or anything on that, no.**  
6 **MS. WENDLING:** All right. I have no  
7 further questions.  
8 **PRESIDING OFFICER:** Yes.  
9 **MR. OLEEN:** Would the witness like a  
10 break before I begin my line of redirect?  
11 **A. No. What's a break? But thank you, no, I'm**  
12 **good.**  
13  
14 **REDIRECT EXAMINATION**  
15 **BY MR. OLEEN:**  
16 Q. Okay. Mr. Letourneau, I'm now presented with a  
17 chance to ask you some redirect questions and --  
18 regarding your cross-examination, and your  
19 cross-examination has gone on not only on  
20 today's date but also the hearing days we had  
21 back in February, so I'll try to work backwards  
22 in terms of my topics and talk about what we  
23 talked about today first. But I do need to go  
24 back and revisit some of your testimony from  
25 February.

1 concerns about which we talked before regarding  
2 well spacing consents or waivers, right?  
3 **A. Correct.**  
4 Q. Okay. Are there -- currently, are there spacing  
5 concerns between existing ASR wells and these  
6 other existing irrigation rights or stock  
7 watering rights that Ms. Wendling was referring  
8 to when she asked you why 12 and 13 don't cover  
9 irrigation or stock watering rights?  
10 **A. I'm not aware of any spacing situations other**  
11 **than the domestics.**  
12 Q. So I know you -- as you sit here today you don't  
13 have access to all the other available data that  
14 you would have at your office, but are you  
15 saying that you don't believe that there are any  
16 existing irrigation or stock watering water  
17 rights that are within 660 feet of an existing  
18 ASR well?  
19 **A. I don't know, though. Without having that data,**  
20 **I don't know, but I don't think -- I don't**  
21 **believe there is.**  
22 Q. Okay. And assuming that there isn't, why -- if  
23 there's -- why does the 660 foot, where does  
24 that radius -- under what context does that  
25 radius originate?

1 As to Ms. Wendling's line of  
2 cross-examination, she had asked you some  
3 questions regarding proposed draft permit  
4 conditions 12 and 13 that are part of an  
5 enclosure to DWR Exhibit Number 1. Do you  
6 remember that just now?  
7 **A. Yes.**  
8 Q. And would you -- well, do you -- if I said that  
9 those two proposed conditions that you were  
10 talking about at numbers 12 and 13 pertain to  
11 protecting existing domestic well owners, do you  
12 recall that line of discussion?  
13 **A. Yes.**  
14 Q. Okay. Maybe just be best if you turn to that  
15 now, please, those proposed draft conditions 12  
16 and 13 that are enclosed to DWR Exhibit 1, that  
17 letter. You -- I believe you testified that  
18 numbers 12 and 13 only pertain to domestic  
19 wells, right?  
20 **A. Yeah, I just read the first line, but yes.**  
21 Q. Okay. Well, I always want you to read as much  
22 as you need to read to answer questions  
23 accurately, but my question is this: With  
24 respect to existing domestic well owners, isn't  
25 it true that we have some well spacing concerns,

1 **A. That spacing -- that spacing requirements to**  
2 **domestic wells of 660 feet.**  
3 Q. I guess my question is does it -- if it's true  
4 that these other irrigation and stock watering  
5 rights that Ms. Wendling was asking you about,  
6 if it's true that they're not within 660 feet,  
7 does that make a difference and explain why  
8 maybe those types of water rights are not listed  
9 in proposed conditions 12 and 13?  
10 **A. Well, I don't -- I guess I don't quite**  
11 **understand the -- I mean, everybody's protected**  
12 **by priority, whether it's domestic or any use in**  
13 **even spacing. So, I mean, this right here is**  
14 **just -- domestic well owners within 660 feet are**  
15 **protected with these permit conditions.**  
16 Q. While I'm on this topic of well spacing, I'll go  
17 back actually to a line of questioning that  
18 happened back in February from Mr. Stucky, and  
19 do you recall a line of questioning about GMD2  
20 requesting that Wichita solicit domestic well  
21 spacing consent forms?  
22 **A. Yes, correct.**  
23 Q. And that discussion about a waiver of spacing  
24 requirements?  
25 **A. A consent, yeah, the -- the owners consented to**



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1 **less spacing requirements.**  
 2 Q. Some owners did?  
 3 **A. Correct.**  
 4 Q. Because did I understand it correctly that not  
 5 everybody returned consent forms?  
 6 **A. I think --**  
 7 Q. Or do you know?  
 8 **A. I think that's correct. I'm -- I'm not sure,**  
 9 **but yeah.**  
 10 Q. Okay. If you ever don't know, feel free to tell  
 11 me you don't know. So even though consent forms  
 12 were solicited, isn't it true that a waiver of  
 13 spacing requirements was granted?  
 14 **A. Yes, I believe so.**  
 15 Q. And who actually grants that waiver?  
 16 **A. Oh, the chief engineer.**  
 17 Q. Okay.  
 18 **A. The chief engineer grants the waivers of the**  
 19 **rules.**  
 20 Q. So I want to clear up something because I think  
 21 there's -- I think there's been discussion about  
 22 GMD granting waivers of spacing requirements,  
 23 and I want you to tell me if it's incorrect that  
 24 they -- that GMD grants waivers of spacing  
 25 requirements?

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1 **A. No, but the GMD recommends a waiver of a rule.**  
 2 **But the chief engineer is the one that**  
 3 **ultimately waives the rule.**  
 4 Q. So regardless of what the GMD might recommend,  
 5 it's still within the power of the chief  
 6 engineer to decide whether or not to waive a  
 7 particular DWR regulation?  
 8 **A. That's correct.**  
 9 Q. Regulations that would include a regulation that  
 10 pertains to well spacing?  
 11 **A. That's correct.**  
 12 Q. So there was discussion, I believe, back in  
 13 February, Mr. Stucky's line of questioning about  
 14 the validity of previous well spacing consents,  
 15 right, remember that line of discussion?  
 16 **A. Yes, absolutely, yes.**  
 17 Q. And about the validity of -- the ongoing  
 18 validity of GMD's previous recommendation to  
 19 waive spacing. Do you remember that line of  
 20 questioning?  
 21 **A. Yes.**  
 22 Q. So what I want to know is that notwithstanding  
 23 whatever GMD might recommend as the course of  
 24 these proceedings, if the chief engineer  
 25 believes that it's appropriate to waive the

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1 spacing regulations, can he do that?  
 2 **A. Yes.**  
 3 Q. And do you think -- is it DWR's opinion, rather,  
 4 that the proposed conditions relating -- let me  
 5 strike that and start over, I'll do a better  
 6 job. Going back to the proposed conditions 12  
 7 and 13 that were attached to DWR Exhibit 1, does  
 8 DWR believe that conditions in substantially  
 9 that form, I understand they're still drafts,  
 10 but does DWR believe that conditions in  
 11 substantially those forms would have the effect  
 12 of protecting these domestic well owners from  
 13 water quality or quantity concerns?  
 14 **A. Yes, absolutely. These two conditions protect**  
 15 **every domestic owner, you know, in that**  
 16 **category, and everybody that even signed the**  
 17 **domestic consent form. I mean, these conditions**  
 18 **protect the people that signed those consent**  
 19 **forms.**  
 20 Q. So do you -- does DWR believe that conditions  
 21 like this provides sufficient protection such  
 22 that it doesn't matter if GMD2 is now  
 23 recommending that their waivers be rescinded,  
 24 assuming that can happen? Are you telling me  
 25 that DWR believes that these proposed conditions

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1 provide adequate enough protection that to the  
 2 extent some spacing regulation still applies,  
 3 the chief engineer should waive it?  
 4 **A. Yes.**  
 5 Q. Now, back to Ms. Wendling's line of questioning  
 6 again today, and we talked about Intervenor's  
 7 Exhibit -- well, tab 17, which I believe was tab  
 8 17 in the Intervenor's book, and it is the  
 9 actual permit for existing Wichita permit  
 10 46,627.  
 11 **A. Okay.**  
 12 Q. Let me know when you've found that.  
 13 **A. I'm here, yep.**  
 14 Q. Okay. So Ms. Wendling had asked you some  
 15 questions about the authorized quantity under  
 16 this permit, and I believe you said that this  
 17 particular permit regarding file number 46,627  
 18 is a dual use permit, correct?  
 19 **A. That's correct.**  
 20 Q. Okay. And she had asked you, if you would turn  
 21 to paragraph number 5, she asked you, didn't  
 22 she, about that authorized quantity of 45,230  
 23 acre-feet and whether that quantity is 45,230  
 24 acre-feet of municipal use water and also a  
 25 separate 45,230 acre-feet of artificial recharge

1 use water. Do you remember that question?  
2 **A. Correct.**

3 Q. And I think you had said that you had just  
4 briefly looked at this permit and that I thought  
5 you agreed with her that it was two separate  
6 45,230 acre-foot authorized quantities?

7 **A. It's a single quantity.**

8 Q. Okay. Well, that's -- go ahead.

9 **A. I was just going to say, it's not spelled out  
10 per use under this permit, but it's a single  
11 quantity of 45,230.**

12 Q. Well, you tell me if this clarifies things. I'd  
13 like you to refer to paragraph 23. I know  
14 you're always asked to make decisions on  
15 documents that you're not given full time to  
16 review, and I'd like you to review paragraph 23,  
17 tell me when you're done.

18 **A. Okay. Yeah, paragraph 5 and 23 are together  
19 but -- as far as quantity, and 23 states, that  
20 the rate of diversion and quantity of water  
21 approved under this permit for municipal use is  
22 further limited to the rate of diversion and  
23 quantity which when combined with the rate of  
24 diversion and quantity of the water authorized  
25 for artificial recharge will provide a maximum**

1 **diversion rate not in excess of 41,667 gallons  
2 per minute and to a quantity not to exceed, in  
3 parentheses, 45,230 acre-feet of water for any  
4 calendar year.**

5 Q. So I guess what I want to know is now that  
6 you've read paragraph 23 that changes your  
7 answer -- that changes what I understood your  
8 answer to be to Ms. Wendling's question about  
9 the dual usages under this permit and whether  
10 this authorizes 45,230 for each of those two  
11 uses or not?

12 **A. Well, they're limited to one another. That's --  
13 that's the maximum for each one during --  
14 limited to each other during one calendar year.**

15 Q. So that -- and for the benefit not only perhaps  
16 of Ms. Wendling but anyone else here, that sort  
17 of a limitation means -- does that effectively  
18 mean that you don't get two 45,000 numbers that  
19 you can pump, there's one 45,000 number between  
20 the two dual uses?

21 **A. That's correct. Both -- both of them together  
22 can divert 45,230.**

23 Q. Okay. Jumping back now to a line of questioning  
24 from Mr. Stucky, he had -- let me start over. I  
25 believe he asked you a question about whether if

1 the City were to only accumulate recharge  
2 credits under the current Phase II permits, so  
3 only recharge credits that are accumulated from  
4 physical recharge of water, I believe he asked  
5 you a question whether you thought the City  
6 could ever reach 120,000 acre-feet of such  
7 physical recharge credit. And I don't recall  
8 what your answer was, I thought it might be no,  
9 but what was your answer again?

10 **A. Well, I thought about if -- currently the space  
11 in the aquifer is 120,000, according to the USGS  
12 model. And so if we were at -- and recharge  
13 credits leak, they've got a -- they've got --  
14 part of them go away each year. So I thought  
15 that if the max was 120 but a little bit was  
16 going away each year that they could never get  
17 to 120. But if -- if they had a year -- if they  
18 were close to 120 and, say, 12,000 of them  
19 leaked away but they had a year where they  
20 accumulated 15,000, then for a short period of  
21 time, they could accumulate 120. But on paper.  
22 That's ...**

23 Q. What I wanted to clarify, I understand that  
24 because of this -- the fact that the recharge  
25 credits leak that, you know, you can't perhaps

1 stay -- or it can be difficult to stay at any  
2 certain number, pick a number, of accumulated  
3 recharge credits because they're constantly  
4 slowly decreasing at some rate.

5 **A. Right.**

6 Q. But I want to know whether your answer -- and so  
7 if your answer is saying it can be difficult to  
8 stay at 120,000 acre-feet, or any other number,  
9 I get that, but I want to make sure that you  
10 weren't -- or I want to know if you were saying  
11 that you don't think they could ever accumulate  
12 something close to that amount?

13 **A. Oh, it would take a long time that they could  
14 accumulate something close to that amount. But  
15 with that in mind, once they're maxed at 120,  
16 that leaks a little bit. But --**

17 Q. Right, I understand that everything leaks.

18 **A. Right.**

19 Q. And currently physical recharge credits are not  
20 subject to a cap of 120,000 or anything, right?

21 **A. That's correct.**

22 Q. Mr. Stucky also had a line of questioning about  
23 the propriety of imposing certain conditions on  
24 ASR Phase II permits, assuming Wichita's  
25 proposal is approved, and I believe there was a

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1 discussion about whether there's -- the proposal  
 2 has any language indicating that the AMCs or any  
 3 recharge credits could only be withdrawn in a  
 4 drought situation. Do you remember a line of  
 5 questioning maybe along those lines?  
 6 **A. Yes.**  
 7 Q. Well, regardless, I guess what I want to know is  
 8 to the extent some might think that, oh, let's  
 9 just put a drought condition on withdrawal of  
 10 recharge credits, number one, I guess I want to  
 11 know is there currently some sort of condition  
 12 that requires Wichita to only be able to  
 13 withdraw accumulated recharge credits under the  
 14 current system, are they only allowed to do that  
 15 if there's some sort of drought trigger or  
 16 condition that is in effect?  
 17 **A. No, they can withdraw the recharge credits now.**  
 18 Q. Okay. So to the extent that the GMD or anybody  
 19 else wants there to be some sort of specific  
 20 drought condition or trigger in the event that  
 21 this proposal is approved, is that an easy thing  
 22 to do?  
 23 **A. No. You never know when you're in a drought**  
 24 **until you're a year or two into it.**  
 25 Q. So --

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1 **A. So it's kind of hard to start it, I mean, it's**  
 2 **kind of -- what's the starting point of the**  
 3 **drought? You don't know you're in a drought**  
 4 **until you're well into the drought.**  
 5 Q. So do you think it might be easy to hypothecate  
 6 about we add drought conditions, but actually  
 7 drafting that in a way that is useful is  
 8 difficult?  
 9 **A. Yeah, I don't know when to start it.**  
 10 Q. Do you think based on what you've read of the  
 11 proposal and what you've heard of the testimony  
 12 from the City's witnesses, do you think that  
 13 they have an incentive if this proposal is  
 14 approved to withdraw any recharge credits when  
 15 there's not a drought?  
 16 **A. Not based on this proposal.**  
 17 Q. Stay on the subject of AMCs, I believe  
 18 Mr. Stucky had a line of questioning about the  
 19 source water of AMC, and I'd like to, again,  
 20 direct your attention to DWR Exhibit 1 and ask  
 21 you to turn to the enclosure to that DWR  
 22 Exhibit 1. And once you're there, if you'd read  
 23 the -- well, so we know what we're talking  
 24 about, this is the responses, it's titled  
 25 Responses to GMD2 Legal/Policy Questions and

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1 Comments, correct? It's the enclosure to DWR  
 2 Exhibit 1 which is a June 1st, 2018 letter?  
 3 **A. June, yes.**  
 4 Q. Okay. Are you at the enclosure?  
 5 **A. I'm there now.**  
 6 Q. Okay. The top says Responses to GMD2  
 7 Legal/Policy Questions and Comments, right?  
 8 **A. Correct.**  
 9 Q. And at the very bottom, there is a paragraph  
 10 that is in response to a question about source  
 11 water, right?  
 12 **A. That's correct.**  
 13 Q. And would you read the first sentence of that  
 14 paragraph response?  
 15 **A. The source water for these credits is the Little**  
 16 **Arkansas River pursuant to Water Right File**  
 17 **Number 46,427.**  
 18 Q. And, actually, did you perhaps misspeak, is that  
 19 46,627?  
 20 **A. I'm sorry, 46,627.**  
 21 Q. And is this statement talking about source water  
 22 for the proposed AMCs?  
 23 **A. That's correct.**  
 24 Q. And so maybe you said this before, but do you  
 25 agree with that statement that the source water

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1 for AMCs would be the Little Ark River pursuant  
 2 to Water Right File Number 46,627?  
 3 **A. Yes.**  
 4 Q. Staying on this enclosure, if you turn to the  
 5 next page of this document that we said was  
 6 titled Responses to GMD2 Legal/Policy Questions  
 7 and Comments, at the top, there's a question  
 8 that says, how is an AMC stored in the aquifer  
 9 by artificial recharge. Do you see that?  
 10 **A. Yes.**  
 11 Q. Would you please read the response.  
 12 **A. It is stored in the aquifer as the functional**  
 13 **equivalent of a physical replacement of water,**  
 14 **as expressed above.**  
 15 Q. That was DWR's position at the time this letter  
 16 was sent, right?  
 17 **A. Correct.**  
 18 Q. Is it still DWR's position today regarding this  
 19 issue?  
 20 **A. Yes.**  
 21 Q. To stay on this issue of storage, water storage,  
 22 I don't want to do it because I objected to it  
 23 but you were forced to talk some about the  
 24 regulations, so because others had you do it,  
 25 I'm going to have you do it too for a little bit

1 but not long. If you'd please turn to what I  
2 believe is -- well, it is GMD2's Exhibit 22,  
3 which is purportedly the current regulations and  
4 statutes that DWR administers and enforces. And  
5 if you'd please turn to page 6 where Mr. Stucky  
6 previously asked you questions about the  
7 definition of a recharge credit, which is  
8 technically in K.A.R. 5-1-1, I believe (mmm),  
9 it's on page 6. Do you see that?

10 **A. Yes.**

11 Q. And that (mmm) definition of recharge credit, I  
12 think Mr. Stucky had you -- had you read that,  
13 but regardless do you see where -- where it has  
14 the clause "water that is stored in the basin  
15 storage area," right?

16 **A. That's correct.**

17 Q. And I think Mr. Stucky made some references to  
18 the usage of that verb clause "is stored" as  
19 referring to water that is injected. As you  
20 understand the -- I know you're not a lawyer and  
21 you shouldn't have to be making legal  
22 conclusions, but is it your -- is it DWR's  
23 position, to your knowledge, that that phrase  
24 "water that is stored" is not limited to water  
25 that is stored by physical injection?

1 talk about. So if Mr. Stucky wants to ask  
2 more questions about the definition of  
3 recharge credit in (mmm), I'm fine with  
4 that. I don't think this should allow him  
5 to ask I don't know how many questions  
6 about other regulations.  
7 **PRESIDING OFFICER:** If you're  
8 willing to go forward with that  
9 understanding, then I'm sure we'll be  
10 hearing more about it, but, yes, you can go  
11 forward, and then you can ask whatever  
12 follow-up questions on this regulation  
13 you'd like to.

14 **MR. STUCKY:** And just on this  
15 regulation or any of the regulations, if we  
16 go down this line of questioning?

17 **PRESIDING OFFICER:** If this is where  
18 Mr. Oleen is going to stop in terms of  
19 talking about regulations, then I think  
20 this is as far as it will go. I don't know  
21 where this is headed.

22 **MR. OLEEN:** I will limit my  
23 questions to this particular regulation.

24 **PRESIDING OFFICER:** Okay.

25 **BY MR. OLEEN:**

1 **A. That's correct.**

2 **MR. STUCKY:** Your Honor, I would  
3 like to just -- this isn't actually even an  
4 objection, it's a qualification. I am fine  
5 if Mr. Oleen goes down this whole line of  
6 questioning as far as interpretation of the  
7 statutes, in fact, I'm perfectly fine with  
8 that, but I was cut off from a detailed  
9 examination of these regulations and was  
10 cut short significantly in my cross in that  
11 regard. So all I would ask in return for  
12 Mr. Oleen now being allowed to go down this  
13 line of questioning is for me to have --  
14 for this to open the door for me to fully  
15 go down that line of questioning, that's my  
16 request on the record.

17 **MR. OLEEN:** I would be fine with  
18 opening the door a smidgen to talk about  
19 (mmm). This is the only one I want to talk  
20 about because -- and I objected earlier  
21 because Mr. Stucky was using the words "is  
22 stored" and trying, in my opinion, to put  
23 words in my witness's mouth about what --  
24 what that means. This is the only  
25 regulation that I want -- that I want to

1 Q. And what I want to know, Mr. Letourneau, to the  
2 extent you know, I want to know if DWR has  
3 interpreted that verb clause "is stored" to not  
4 be limited to just water that is stored by  
5 physical injection?

6 **A. Well, it's just -- it's water that's stored,  
7 it's not water -- it's not limited to the water  
8 that was physically put there by injection.  
9 The -- our legal team looked at that and said  
10 it's water that's stored, whether it be an AMC  
11 or a physical recharge credit.**

12 Q. So is another way of saying it is that, to your  
13 understanding, DWR's interpreting that phrase to  
14 refer to where the water is and not necessarily  
15 how it got there?

16 **A. That's correct.**

17 Q. That's all I have to say about that. Going on  
18 to the different key aspects of Wichita's  
19 proposal which is lowering the 1993 bottoms, as  
20 we sometimes refer to them, I think you told  
21 Mr. Stucky that that amounted to -- or that  
22 would amount to a, quote, fundamental change.  
23 Do you recall using that phraseology?

24 **A. Yes, it's a fundamental change to the permit  
25 conditions but not an overall fundamental change**

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1 **to the whole project.**  
 2 Q. When you said fundamental change, did you mean  
 3 material change in the eyes of DWR as -- as it  
 4 pertains to the basin storage area or the  
 5 aquifer as a whole?  
 6 **A. No.**  
 7 Q. So is it -- is it still DWR's opinion, as I  
 8 think you have testified, that lowering the  
 9 bottoms is not that big a deal in DWR's -- well,  
 10 I don't want to put those words in your mouth.  
 11 **A. Right.**  
 12 Q. I thought you said that lowering the bottoms  
 13 compared to the remaining modeled thickness,  
 14 average thickness of the aquifer is not that  
 15 great. Is that what you said?  
 16 **A. Yeah, we -- we feel that lowering the bottoms is**  
 17 **reasonable.**  
 18 Q. On the issue of the '93 bottoms, stay on that  
 19 topic, there have been a line of discussion from  
 20 Mr. Stucky -- line of discussions from  
 21 Mr. Stucky about GMD2 Exhibit 26, if you would  
 22 please turn to that. Which is the ASR Phase I  
 23 initial approval order, I will represent to you.  
 24 Have you found that document?  
 25 **A. Yes, yes, I'm there, thanks.**

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1 Q. If you turn to page 12 of 21, paragraph 13, are  
 2 you there?  
 3 **A. I'm there, yes.**  
 4 Q. Do you remember a line of questioning about --  
 5 about that particular paragraph 13 and  
 6 questioning about supposed implications about,  
 7 quote, public interest, as it's referenced in  
 8 that paragraph 13?  
 9 **A. Yes.**  
 10 Q. At the time that this Phase I approval was  
 11 issued, which was maybe around 2005; is that  
 12 right?  
 13 **A. August 8th of 2005.**  
 14 Q. At the time that this Phase I approval was  
 15 issued, the chief engineer at the time would not  
 16 have had available to him the modeling reports  
 17 that DWR has recently been presented with by the  
 18 City as part of its proposal; is that accurate?  
 19 **A. Yeah, that -- we didn't have the proposal at**  
 20 **that time.**  
 21 Q. So at the time that this Phase I approval was  
 22 issued, the chief engineer would not have had  
 23 the -- all the graphs and tables that you have  
 24 previously looked and testified about that show  
 25 different things in the City's proposal that

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1 we're considering today, right?  
 2 **A. Correct.**  
 3 Q. Kind of staying on the issue of, quote, public  
 4 interest, previously Mr. Stucky asked you a line  
 5 of questioning about whether and how DWR thinks  
 6 this proposal might be in the public interest,  
 7 and you actually submitted written testimony  
 8 that addressed that issue in this matter, right?  
 9 **A. Correct.**  
 10 Q. And I believe you said -- well, what did you say  
 11 was why this proposal might be in the public's  
 12 best interest? What was DWR's understanding?  
 13 **A. Well, starting with the aquifer in full**  
 14 **conditions going into a 1 percent drought,**  
 15 **that's better -- that's better for every well**  
 16 **owner in the aquifer.**  
 17 Q. And taken as an item of, quote, public interest,  
 18 is that a big one, or is that a little one?  
 19 **A. Oh, that's a big one to us. I mean, it's just**  
 20 **much better going into a drought with a full**  
 21 **aquifer.**  
 22 Q. And can you tell me some of the implications,  
 23 can you unpack that statement of going into an  
 24 aquifer full -- excuse me, going into a 1  
 25 percent drought with a full aquifer, can you

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1 kind of unpack that and tell me some of the  
 2 beneficial implications of that?  
 3 **A. Well, off the top of my head, I mean, when the**  
 4 **aquifer's full, you got reduced pumping costs,**  
 5 **well-to-well impacts are -- don't happen with a**  
 6 **full aquifer, and just the state of the resource**  
 7 **is so much better off going into a drought with**  
 8 **a full aquifer.**  
 9 Q. When you said reduced pumping costs, to whom  
 10 were you referring and how are -- how are there  
 11 reduced pumping costs?  
 12 **A. Well, when you pump a well, you've got to**  
 13 **overcome the head, I'll call it, the water**  
 14 **table, and so if it's -- if the water table is**  
 15 **lower, it takes more energy to pump the water.**  
 16 **Therefore, if it's higher, less energy and less**  
 17 **pumping costs. And just the well-to-well impact**  
 18 **isn't there, I mean, there's just less concern**  
 19 **when you've got more water in your well. It was**  
 20 **a big one to us.**  
 21 Q. I'd like to ask you to turn to GMD Exhibit 28  
 22 now, which I'll represent is the approval for  
 23 the ASR Phase II concept. Have you found that?  
 24 **A. Yes. Yes, thank you.**  
 25 Q. If you'd turn to page 5 of that approval of ASR

1 Phase II, and in a minute, I want to talk about  
2 paragraphs 5 and 6 on that page 5. But first I  
3 want to clarify, I think it's necessary, but  
4 does DWR view recognition of the proposed AMCs  
5 as being purely an accounting exercise?

6 **A. Yes.**

7 Q. And I don't know if you've read paragraph 5 of  
8 GMD -- on page 5 of GMD Exhibit 28 before into  
9 the record but if you would please do so now.

10 **A. That the model and accounting methodology**  
11 **remains as previously submitted, until otherwise**  
12 **modified by formal written approval of the chief**  
13 **engineer.**

14 Q. And so is it your understanding that -- well,  
15 let me take you back to DWR Exhibit 1, the  
16 letter dated June 1st, 2018 by Chief Engineer  
17 Barfield. Do you see there on the first page,  
18 second paragraph where it starts with, and I'm  
19 going to start mid sentence but it says, it is  
20 the position of myself, do you see that there?

21 **A. Yes.**

22 Q. Would you please read that through the rest of  
23 the sentence.

24 **A. It is the position of myself and the Division of**  
25 **Water Resources that AMCs, as proposed in this**

1 Q. Regardless of whatever this paragraph 6 means,  
2 we're nevertheless holding a hearing today about  
3 what in the context of AMCs you have said DWR  
4 believes constitutes an accounting concept; is  
5 that true?

6 **A. That's correct.**

7 Q. Switching gears here, and I'm nearing the end,  
8 there was a discussion back in February where  
9 Mr. Stucky had you look at some well logs in the  
10 context of calculating practical saturated  
11 thickness as compared to average saturated  
12 thickness. Do you recall that line of  
13 questioning?

14 **A. Yes, I do.**

15 Q. I believe you've even said today that you think  
16 those -- was it about three wells that  
17 Mr. Stucky had you review?

18 **A. Three or four. I -- I don't remember now.**

19 Q. Did you testify today that you thought those  
20 were observation wells?

21 **A. I believe those were observation wells in the --**  
22 **based on that thing, but, I mean, I think that's**  
23 **what they were.**

24 Q. And let's assume that they are.

25 **A. Okay.**

1 **project, constitute a potential additional**  
2 **method to accumulate and account for recharge**  
3 **credit under existing authorities.**

4 Q. Is it your understanding, and there's a lot more  
5 to this letter, there's also, as we've gone  
6 through, an enclosure that addresses other legal  
7 and policy questions, and feel free to refer to  
8 that if you need to, but is it your  
9 understanding based on what you just read and  
10 the reference to existing authorities that one  
11 of those, if not the main one, is that paragraph  
12 5 from the ASR Phase II approval, GMD2 Exhibit  
13 28 that you just read?

14 **A. Yes.**

15 Q. And, in fact, paragraph 6, does that contemplate  
16 not needing to hold additional public hearings  
17 regarding certain accounting methodologies?

18 **A. Yes, it states, that if the City develops an**  
19 **improved model or methodology to account for**  
20 **water stored in the basin storage area that is**  
21 **approved by the chief engineer, after**  
22 **consideration of the recommendation of the GMD2,**  
23 **that the chief engineer may approve such**  
24 **approved methodology without the necessity of**  
25 **holding additional public hearings.**

1 Q. You also testified today, you made a distinction  
2 between production wells and observation wells.

3 **A. Right.**

4 Q. And I think you said it might be a good idea if  
5 you're going to look at anything to look at  
6 production wells, is that what you said?

7 **A. Correct. That is correct, Aaron, I mean, the**  
8 **production wells are normally what we find in**  
9 **any -- in any area, the better wells are the**  
10 **production wells.**

11 Q. And can you elaborate on -- to the extent one is  
12 going to go through the exercise that Mr. Stucky  
13 had you do, can you elaborate to me on why it  
14 makes a difference, if it does in your opinion,  
15 about doing that with observation wells versus  
16 doing it with production wells?

17 **A. Well, again, I don't know under what**  
18 **circumstance these observation wells were put**  
19 **in, whether it was based on geography and**  
20 **location or if these observation wells were test**  
21 **drilled and test pumped. And if then they**  
22 **didn't have adequate saturated thickness or the**  
23 **pumping ability, if those wells were turned into**  
24 **observation wells. That happens quite a bit,**  
25 **the wells that aren't put into production become**

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1 **observation wells.**  
 2 **But the wells that are normally very**  
 3 **good -- I mean, the good -- the wells that test**  
 4 **pump then become the production wells. And so**  
 5 **it would be good under that scenario if we**  
 6 **reviewed not only the observation wells but then**  
 7 **also the production wells to get -- when you're**  
 8 **looking at an average, the more data, the better**  
 9 **basically.**  
 10 Q. And so with respect to that data, are you saying  
 11 that to the extent that data has any sort of  
 12 persuasive value, it's more persuasive to you if  
 13 it's coming from a production well versus an  
 14 observation well?  
 15 **A. Yes. With the caveat I don't know what**  
 16 **condition these observation wells were put in.**  
 17 Q. Those wells that Mr. Stucky had you review, and  
 18 I know you think maybe they were only  
 19 observation wells, but do you feel like those  
 20 wells are representative of the area that's  
 21 implicated under this ASR Phase II proposal?  
 22 **A. Well, I think production wells would be more**  
 23 **representative of this area than observation**  
 24 **wells, but these wells -- these observation**  
 25 **wells obviously are being used for something.**

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1 **For observation so ...**  
 2 Q. To stay on kind of the concept of the practical  
 3 saturated thickness versus average saturated  
 4 thickness in an aquifer, is it true based on  
 5 your experience in working for DWR that a well  
 6 with a low practical saturated thickness means  
 7 it will be a poorly yielding well in terms of  
 8 water?  
 9 **A. No, no, it depends on -- it depends on the**  
 10 **aquifer properties if -- if it's a good yielding**  
 11 **well or not, not the saturated thickness. You**  
 12 **can have a lot of saturated thickness with a lot**  
 13 **of clays and things that don't produce as much**  
 14 **as less saturated thickness that are nothing but**  
 15 **high transmissivity sand. You can have a dang**  
 16 **good well with not a lot of saturated thickness.**  
 17 Q. There -- shifting gears, Mr. Letourneau, there  
 18 has been a line of questioning previously when  
 19 you were crossed by Mr. Stucky about -- I don't  
 20 know if it -- who may have uttered this phrase  
 21 but excluding GMD from discussions about the  
 22 proposal that we're here today to talk about.  
 23 Do you remember kind of that line of  
 24 questioning?  
 25 **A. Yes.**

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1 Q. And do you -- well, let me say it this way. DWR  
 2 Exhibit Number 1, I'll have you turn to for  
 3 hopefully the last time.  
 4 **A. That's fine.**  
 5 Q. The first paragraph, doesn't it -- it's  
 6 addressed to GMD2 Board of Directors, this  
 7 letter?  
 8 **A. Yes.**  
 9 Q. And isn't the first paragraph thanking the Board  
 10 for their comments from their initial review of  
 11 Wichita's proposed changes to ASR Phase II? Is  
 12 that right?  
 13 **A. Yes, that's correct.**  
 14 Q. So I guess do you feel like, was GMD excluded  
 15 from discussions or no, and if so, how?  
 16 **A. No, they were not excluded. They were not part**  
 17 **of the early meetings, they were -- that the**  
 18 **chief, if I recall correctly, asked the City and**  
 19 **the GMD to work out modeling differences. Then**  
 20 **I knew that we were going to go to a meeting in**  
 21 **Halstead, if I recall correctly, and I think the**  
 22 **City may have gotten a letter from Tim Boese,**  
 23 **like, the day before or the night before with a**  
 24 **list of things that they had tried to work**  
 25 **through. And then if I recall correctly, Alan**

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1 **King had written a letter to thank them for all**  
 2 **the process, but then we were going to move**  
 3 **forward with the proposal.**  
 4 **Then DWR and the City worked through the**  
 5 **proposal, but then I know that David had kept**  
 6 **GMD in the loop -- in the loop appropriately.**  
 7 **This letter is after the Alan King letter. I**  
 8 **know that last -- the comments that we got from**  
 9 **Tim Boese, there were some things that we**  
 10 **implemented from Tim's last comments, and so**  
 11 **we -- we didn't fully exclude them.**  
 12 Q. So the City may have ceased seeking GMD's input  
 13 as to modeling questions, is that what I  
 14 understand --  
 15 **A. I -- I believe so, yes.**  
 16 Q. But at least at the time of this letter, GMD was  
 17 still being engaged in the course of coming up  
 18 with potential proposed conditions for this  
 19 proposal that we're here talking about, right?  
 20 **A. Yes, I believe so.**  
 21 Q. What I hope will be my last question,  
 22 Mr. Letourneau, anytime that DWR is -- is  
 23 considering whether impairment might occur, if  
 24 DWR doesn't think that there is reasonable proof  
 25 suggesting that impairment will occur, will that

1 stop DWR from approving whatever change or new  
2 application or modification may be in front of  
3 it?

4 **A. No, we will approve it if we don't think -- if**  
5 **we don't see impairment will occur, we'll**  
6 **approve it.**

7 Q. And if someone were to claim impairment in the  
8 future, or at any time, does DWR have a set of  
9 statutes and regulations that gives DWR tools to  
10 investigate, address, and, if necessary,  
11 remediate that impairment?

12 **A. Yes, yes, it's K.A.R. 5-4-1 and 5-4-1(a). And 1**  
13 **deals with direct well-to-well impairment, and**  
14 **1(a) deals with an overall lowering of the water**  
15 **table impairment.**

16 **MR. OLEEN:** No further questions.

17 **PRESIDING OFFICER:** Mr. McLeod.

18 **MR. MCLEOD:** Just before I start, I  
19 will ask again if the witness needs a break  
20 because he's been sitting here for a while?

21 **A. I -- you know, yeah, I think a five-minute break**  
22 **would be good.**

23 **PRESIDING OFFICER:** Okay.

24 **A. Yeah, thank you.**

25 **PRESIDING OFFICER:** Okay. We'll go

1 recommendation on -- actually seeking their  
2 review of a staff decision of recommendation to  
3 deny well spacing waivers. Counsel, I think, in  
4 his questioning characterized materials in the  
5 last paragraph on the second page of this letter  
6 as advancing to the District assurances that  
7 water levels would not drop below the 1993 index  
8 level. Do you see that second clause in the  
9 last paragraph there?

10 **A. Yes.**

11 Q. And, first, for a little foundation, you didn't  
12 write this letter, did you, Mr. Letourneau?

13 **A. No.**

14 Q. And when you look at the text that's actually  
15 here -- well, if you would read that second  
16 clause in the last paragraph.

17 **A. Brian, let me see, the second clause, and**  
18 **whereas --**

19 Q. Yeah.

20 **A. -- ASR water rights may be utilized only when**  
21 **water levels exceed the level observed in 1993.**

22 Q. That's good.

23 **A. Okay.**

24 Q. Okay. Anywhere in this letter do the words  
25 assure or assurances appear?

1 off the record.  
2 (Thereupon, a recess was taken;  
3 whereupon, the following was had.)  
4 **PRESIDING OFFICER:** Okay. We're  
5 back on the record. And, Mr. McLeod.  
6 **MR. MCLEOD:** Thank you.

7  
8 **RECROSS EXAMINATION**  
9 **BY MR. MCLEOD:**

10 Q. Mr. Letourneau, I think it was back in our  
11 February hearing days when the District's  
12 counsel asked you about some letters that were  
13 marked Exhibits 53 and 57 of the District, if  
14 you can find those in their hearing volume.

15 **A. I'm getting there. Thank you for your patience.**

16 **PRESIDING OFFICER:** I'm sorry, which  
17 exhibit numbers?

18 **MR. MCLEOD:** Numbers 53 and 57.

19 **PRESIDING OFFICER:** Thank you.

20 **A. I'm at 53, Brian.**

21 **BY MR. MCLEOD:**

22 Q. Okay. With respect to this document, a letter I  
23 believe by David Warren, who at the time was  
24 city director of utilities, contacting the Board  
25 of Directors of the District, seeking their

1 **A. No, I don't see them when I review it.**  
2 Q. And does that text, ASR water rights may be  
3 utilized only when water levels exceed the level  
4 observed in 1993, does that say that  
5 Mr. Warren's assuring the index levels will  
6 never drop below the 1993 levels?

7 **A. No.**

8 Q. Looking at the actual language that's -- that's  
9 in the letter, rather than an assurance from  
10 Mr. Warren that water levels would not drop  
11 below the 1993 levels, does it not seem to you  
12 like Mr. Warren was just reciting the existing  
13 limit at that time on the recovery of ASR  
14 credits?

15 **A. That's correct.**

16 Q. And as you had indicated, I think, in response  
17 to Mr. Oleen's questioning, it really is the  
18 chief engineer that ultimately makes the  
19 decision on spacing waivers, is it not?

20 **A. That's correct.**

21 Q. If you will look now at Exhibit 57 of the  
22 District, and you will see, I think, in -- well,  
23 let me ask you, is this a set of letters that  
24 are roughly in the same format to different  
25 addressees?



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1 **A. That's correct.**  
 2 Q. And all of these apparently written by Debra  
 3 Ary --  
 4 **A. That's correct.**  
 5 Q. -- of the City? And you, therefore, didn't  
 6 write any of these, correct, Mr. Letourneau?  
 7 **A. That's correct, I did not.**  
 8 Q. And I think Counsel had asked you a similar  
 9 question as to this whole series of letters,  
 10 whether they were providing assurances that  
 11 water levels would not drop below the 1993 index  
 12 level. Do you see the words assure or  
 13 assurances anywhere in any of these letters?  
 14 **A. No.**  
 15 Q. If you look, for example, on the first -- the  
 16 first page, the first letter, the last sentence  
 17 in the end of the first paragraph, what does  
 18 that sentence actually say?  
 19 **A. Withdrawals will not be permitted if water**  
 20 **levels are below the 1993 baseline established**  
 21 **by the ASR permit.**  
 22 Q. Okay. And the sentence before that is clearly  
 23 directed to recharge credits, is it not?  
 24 **A. That's correct.**  
 25 Q. So it's -- instead of saying that water levels

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1 would never drop below the 1993 index levels, I  
 2 mean, it's completely possible Ms. Ary was  
 3 simply trying to convey that withdrawals of  
 4 credits would not be permitted if the water  
 5 levels were below the 1993 index level?  
 6 **A. That's correct.**  
 7 Q. And, again, potentially could have just been  
 8 saying that because at that -- at that time that  
 9 was the index level that mattered for purposes  
 10 of the credit recovery condition, correct?  
 11 **A. That's correct.**  
 12 Q. Still is today, in fact, unless the City's  
 13 proposal is approved, correct?  
 14 **A. That's correct.**  
 15 Q. For people who did send consent forms for  
 16 spacing waivers, did the consent forms change  
 17 the ability of a domestic well owner to seek  
 18 resolution on an impairment issue if such an  
 19 issue arises?  
 20 **A. No.**  
 21 Q. So even if the domestic well owners signed a  
 22 waiver consent, they would still have  
 23 protections through DWR's authority to  
 24 administer impairment complaints?  
 25 **A. That's correct.**

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1 Q. In the process to try to develop permit  
 2 conditions, has the City communicated its  
 3 intentions to remedy quantity or quality issues  
 4 for domestic well owners if any such are created  
 5 by the permit modifications requested?  
 6 **A. Yes.**  
 7 Q. Has DWR granted waivers of spacing on other  
 8 applications wherein DWR's opinion impairment  
 9 was unlikely?  
 10 **A. Yes.**  
 11 Q. Does that happen frequently?  
 12 **A. Yeah, that's the -- that's the rule we waive the**  
 13 **most is spacing.**  
 14 Q. In many of the questions that Counsel asked you  
 15 about multiple uses and what AMCs are, I think  
 16 you had indicated that to DWR, AMCs are the  
 17 result of an accounting exercise?  
 18 **A. That's correct.**  
 19 Q. And Ms. Wendling had you go through the entire  
 20 list of uses that are referenced in statute, and  
 21 I think municipal and recharge uses were  
 22 relevant uses that you saw?  
 23 **A. That's correct.**  
 24 Q. She pointed out that storage is not specifically  
 25 mentioned there. Let me ask you this question,

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1 in recognize the exist -- in recognizing the  
 2 existence of water left in the aquifer for  
 3 purposes of an accounting process, is that a use  
 4 of water within the meaning of any of those 14  
 5 uses in the statute?  
 6 **A. No.**  
 7 Q. Safe yield, there has just -- there has been a  
 8 tremendous amount of discussion on safe yield in  
 9 the questioning thus far. I'm going to give you  
 10 a couple of scenarios to speak to, I'll try to  
 11 go slow and be simple with them. In scenario  
 12 number one, the water level in the aquifer is at  
 13 X, the City pumps a gallon of water out of the  
 14 aquifer, the City recharges the aquifer, the  
 15 City now has a credit, the water level in the  
 16 aquifer is again at X. Scenario two, the water  
 17 level in the aquifer is at X, the City takes a  
 18 gallon of water to town and doesn't reduce the  
 19 water level in the aquifer by pumping, the water  
 20 level in the aquifer is X, the City has a  
 21 credit. So in each scenario, water level in the  
 22 aquifer is at X, the City has a credit. If safe  
 23 yield is not implicated in scenario one with the  
 24 physical recharge credit, how can safe yield be  
 25 implicated in scenario two?

1 **A. It cannot.**

2 Q. Minimum desirable streamflow, Mr. Letourneau, do  
3 you know whether there was any extensive  
4 modeling as to minimum desirable streamflow in  
5 the -- in the approval of the ASR Phase I or  
6 Phase II permits?

7 **A. I don't believe there was. But -- but I wasn't**  
8 **part of it, but until now, MDS has not been**  
9 **brought up.**

10 Q. So in the evaluation of new applications, is it  
11 typical for either the DWR or any of the  
12 groundwater management districts to analyze  
13 minimum desirable streamflow in connection with  
14 a new application?

15 **A. No, we don't.**

16 Q. And I think you indicated, Mr. Letourneau, that  
17 the most typical way the DWR approaches minimum  
18 desirable streamflow is through what you call  
19 real-time administration?

20 **A. That's correct.**

21 Q. And as I understood your general description of  
22 that, if in a stream water levels are falling  
23 below minimum desirable streamflow, essentially  
24 everyone who has a junior right, a right after  
25 1984 in time, they are subject to curtailment in

1 users, you would look to those who were most  
2 proximate to the river as likely contributors to  
3 the issue, correct?

4 **A. That's correct.**

5 Q. So if we were to take this down the road that  
6 the District has suggested, things would be  
7 developed such that when the stream gages drop  
8 below minimum desirable streamflow targets, you  
9 would go through and shut off the surface right  
10 users and also all of the groundwater users  
11 after 1984 with proximity to the river, and then  
12 if that still didn't alleviate the condition,  
13 what further step would you take towards other  
14 groundwater users?

15 **A. Well, we'd look at -- we would have to reach**  
16 **out, then, using a model, have to reach out to**  
17 **see the percentage of impact, 'cause some of the**  
18 **pumping comes from streamflow in a groundwater**  
19 **situation, in -- in the situation where the**  
20 **aquifer contributes to the stream. And so with**  
21 **the model, you can make a determination of how**  
22 **much of that pumping is from streamflow, and**  
23 **then we would look at the percentage of impact**  
24 **and then curtail on that percentage of impact.**

25 Q. And it wouldn't -- I mean, there would not be a

1 order to bring that stream back up to minimum  
2 desirable streamflow?

3 **A. That's correct.**

4 Q. So in practice, if you were going to -- and let  
5 me back up. I think you indicated that  
6 currently DWR doesn't really have complete  
7 information for the Equus Beds Aquifer but you  
8 do for the Republican River and Rattlesnake  
9 Creek?

10 **A. That's correct.**

11 Q. So currently, in the Equus Beds Aquifer, you  
12 wouldn't have complete information to know what  
13 groundwater wells, for example, might be tied to  
14 a minimum desirable streamflow problem?

15 **A. What wells and what impact the well has based on**  
16 **proximity to the stream.**

17 Q. So in -- if you had the situation where minimum  
18 desirable streamflow was below the scheduled  
19 target and -- first you would look to surface  
20 water rights, correct?

21 **A. Correct.**

22 Q. And one of which would be the City surface water  
23 intake?

24 **A. That's correct.**

25 Q. And then in terms of identifying groundwater

1 scenario where you would just go through, for  
2 example, and shut off the City's rights and not  
3 investigate any other groundwater users who were  
4 also drawing water in that time frame?

5 **A. No, it's everybody in, anybody junior to 1984.**

6 Q. Now, Mr. Letourneau, I think you indicated that  
7 one of the things that had to do with minimum  
8 desirable streamflow is how dry a period you're  
9 in?

10 **A. That's correct.**

11 Q. And so any water right could affect minimum  
12 desirable streamflow if there were a prolonged  
13 dry period?

14 **A. Yes.**

15 Q. And so it would be -- it would be foolish as a  
16 matter of course and practice for an efficient  
17 water agency to deny every permit that might  
18 conceivably have an impact on minimum desirable  
19 streamflow in a dry year, correct?

20 **A. That's correct.**

21 Q. And that's one reason why DWR approaches the  
22 issue via real-time administration, correct?

23 **A. That's correct, because if water's available, we**  
24 **want folks to be able to put that water to**  
25 **beneficial use.**

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1 Q. As opposed to denying a permit because in some  
 2 far-flung dry period it might have an impact on  
 3 minimum desirable streamflow?  
 4 **A. That's correct.**  
 5 Q. Mr. Letourneau, if the City has planned too  
 6 conservatively and projected too conservatively  
 7 and as a consequence over-prepares for drought,  
 8 what harm does that cause?  
 9 **A. We -- we don't see it causing any harm.**  
 10 Q. Counsel asked you an entire battery of questions  
 11 on independent modeling and how much independent  
 12 modeling DWR had done and -- as to which you  
 13 were largely unaware because of the Chinese wall  
 14 issues, but the more fundamental question I  
 15 would ask you, how much independent modeling do  
 16 you need to support the idea that AMCs allow the  
 17 City to leave the aquifer full?  
 18 **A. Yeah, we don't need a model for that.**  
 19 Q. How much independent modeling do you need to  
 20 know that it's better to go into a 1 percent  
 21 drought with a full aquifer?  
 22 **A. We -- we don't need modeling for that.**  
 23 Q. I think you were present through Mr. Paul  
 24 McCormick's testimony, and one of the series of  
 25 questions that your counsel asked Mr. McCormick

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1 had to do with the notion that in terms of  
 2 public benefit there is benefit of leaving water  
 3 in situ to settle out rather than churning the  
 4 water by pumping the hole and recharging and  
 5 pumping the hole and recharging. Do you recall  
 6 that testimony?  
 7 **A. Yes.**  
 8 Q. Are you of that same view with respect to the  
 9 benefits of leaving water in situ?  
 10 **A. It seems very reasonable, yes.**  
 11 Q. Possibly you might be able to remember back to  
 12 the very -- the very early stages of the case  
 13 when Mr. Pajor was on the stand and I had  
 14 attempted to ask Mr. Pajor some questions about  
 15 when you take water from the aquifer, is that  
 16 water then gone and hence does it matter that  
 17 much if you make the City take it out earlier,  
 18 and I was stopped by a rash of objections.  
 19 But Counsel asked you some questions about  
 20 multi-year flex accounts, and I recall you  
 21 mentioned that there had been a study of usage  
 22 and how usage was affected, and if I got down in  
 23 my notes the gist of what you said, your results  
 24 of the study basically showed that within the  
 25 five-year window the use was the same with and

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1 without the multi-year flex account. So despite  
 2 all the rocks and dirt and complications that  
 3 make it hard to say that water that's been taken  
 4 out is gone, that was the result, at least, with  
 5 respect to multi-year flex accounts, it was the  
 6 same whether they used the mechanism or whether  
 7 they didn't?  
 8 **A. That -- that's correct, that's what we**  
 9 **determined.**  
 10 Q. Counsel had asked you with respect to the City's  
 11 change in practices around 1993 whether --  
 12 whether the City's pre-1993 use was part of what  
 13 had been causing depletion in the aquifer, and  
 14 you said that it was. Was everyone else's  
 15 pre-1993 use also?  
 16 **A. Oh, absolutely.**  
 17 Q. And Counsel had -- had asked you whether the  
 18 City drawing credit when index levels are  
 19 declining is mandated by any permit condition,  
 20 and I believe you concurred with him that it was  
 21 not. But if the City does not draw credits  
 22 prior to the index level sinking below 1993  
 23 levels in an index cell, is the City effectively  
 24 out credit recovery in that index cell for the  
 25 duration of the drought?

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1 **A. Yes, while the water table is below there, those**  
 2 **recharge credits are stranded and the City**  
 3 **cannot -- cannot acquire them.**  
 4 Q. And there has been a lot of questioning about  
 5 the permit conditions and whether they currently  
 6 strictly require the City to use native rights  
 7 first. First, let's unpack that -- that concept  
 8 some. In terms of using native rights first, do  
 9 you see that as a condition that would apply  
 10 generally or more on a well-to-well basis?  
 11 **A. It -- that's a good question. If -- if the**  
 12 **index cells don't get moved, then I don't see**  
 13 **how that condition could work for the City. But**  
 14 **on a well to well, that could very well work**  
 15 **just based on the aquifer properties in each**  
 16 **index cell.**  
 17 Q. Would it seem to you to make any sense to say  
 18 that if the City had 100 acre-feet of native  
 19 rights left at one well that it would have to  
 20 pump down that one well by that 100 acre-feet  
 21 before it could take credit at any of the other  
 22 wells?  
 23 **A. No.**  
 24 Q. So doing it on a well-by-well basis and  
 25 exhausting native rights for that well before

1 pumping credits for that well would make more  
2 sense?

3 **A. You're kind of confusing me, Brian. So I**  
4 **think -- now, so they need recharge -- does the**  
5 **City need -- in your scenario, does the City**  
6 **need recharge credits, is that -- can you help**  
7 **me with your question?**

8 Q. So let me back up. In terms of the notion of  
9 using the native rights first, which I think you  
10 remember Mr. Pajor thought that was all right  
11 and there are even places in the material where  
12 the City seems to have said that's a good idea.

13 **A. Right.**

14 Q. In terms of implementing that as a permit  
15 requirement, it would not be implemented in such  
16 a way that if the City had one well with 100  
17 acre-feet of native rights left and no native  
18 rights it could pump at any of its other wells,  
19 right, the City should not have to idle all of  
20 those other wells in order to draw that last 100  
21 acre-feet before it could draw credit at any of  
22 the wells?

23 **A. I -- I agree with that. You need to have -- the**  
24 **City needs to have the flexibility to operate**  
25 **its best wells in the best locations.**

1 Q. So I just wanted to clean that up because in all  
2 the discussions of using native rights first --

3 **A. Okay.**

4 Q. -- that had -- that had somehow escaped  
5 coverage. Now, both as to that notion of using  
6 native rights first and then as to the -- as to  
7 the notion that there currently is no permit  
8 condition that says the City would only look to  
9 take these credits for the 1 percent drought, do  
10 you recall the part of Mr. Pajor's testimony  
11 where he said, this is the most expensive water  
12 that the City has?

13 **A. Yes.**

14 Q. Because this -- this water has been treated,  
15 injected; to then pump it out, it's being pumped  
16 once again to get it out of the aquifer for  
17 recovery. And then I believe you had added the  
18 point in your testimony that also these credits  
19 when they're taken, they don't annually renew?

20 **A. That's correct.**

21 Q. And do all of those considerations give the City  
22 incentive not to take these credits unless it  
23 really needs to take them?

24 **A. That's -- that's correct.**

25 Q. There was a long, long winding discussion on

1 leakage, and you probably remember, I think it's  
2 figure 16 in the proposal where there are two  
3 green lines and as the two green lines climb up  
4 towards the upper diagonal, they diverge and it  
5 represents, as I recall, the -- a difference in  
6 accounting methods between the AMC accounting  
7 and the physical recharge, and the variance  
8 occurs to a greater extent the more water is in  
9 the aquifer. If you would turn to page 4-2 in  
10 the proposal.

11 **A. I'm there, Brian.**

12 Q. Okay. As part of a whole long series of  
13 questions where Counsel ultimately suggested  
14 there might need to be reworking of this whole  
15 leakage concept, Counsel had you read the  
16 language in the next-to-the-last paragraph, last  
17 sentence of that paragraph, under these  
18 conditions, 95 percent of the water recharged is  
19 retained as a recharge credit. Now, Counsel  
20 didn't have you read any of the text that  
21 preceded that. And it's important,  
22 Mr. Letourneau, under what conditions -- under  
23 what conditions does that paragraph indicate  
24 that 95 percent of the water recharged is  
25 retained as a recharge credit?

1 Q. So I just wanted to clean that up because in all  
2 the discussions of using native rights first --

3 **A. Okay.**

4 Q. -- that had -- that had somehow escaped  
5 coverage. Now, both as to that notion of using  
6 native rights first and then as to the -- as to  
7 the notion that there currently is no permit  
8 condition that says the City would only look to  
9 take these credits for the 1 percent drought, do  
10 you recall the part of Mr. Pajor's testimony  
11 where he said, this is the most expensive water  
12 that the City has?

13 **A. Yes.**

14 Q. Because this -- this water has been treated,  
15 injected; to then pump it out, it's being pumped  
16 once again to get it out of the aquifer for  
17 recovery. And then I believe you had added the  
18 point in your testimony that also these credits  
19 when they're taken, they don't annually renew?

20 **A. That's correct.**

21 Q. And do all of those considerations give the City  
22 incentive not to take these credits unless it  
23 really needs to take them?

24 **A. That's -- that's correct.**

25 Q. There was a long, long winding discussion on

1 **A. The water levels are at or below the observed in**  
2 **1998.**

3 Q. Thank you. So you were here for Mr. McCormick's  
4 testimony, I know, and I believe during his  
5 testimony, Mr. McCormick explained that this 95  
6 percent retention was modeled on the 1998 levels  
7 purposely, and I think you recognized in your  
8 own earlier testimony that as the aquifer is  
9 fuller, the leakage grows, I think you may have  
10 calculated it, or Mr. McCormick calculated it at  
11 maybe 64 percent in some years when the aquifer  
12 is full, and the premise of this, I believe, as  
13 Mr. McCormick explained it in his testimony, was  
14 we don't want to make the City pump the aquifer  
15 down to 1998 levels in order to retain 95  
16 percent of the credit, so for purposes of the  
17 AMC accounting, we use the 5 percent leakage  
18 figure in order to not penalize the City for not  
19 pumping the aquifer down to the 1998 levels. Do  
20 you remember that testimony?

21 **A. Yes.**

22 Q. And when you consider that, Mr. Letourneau,  
23 would it seem to you that the reason that the  
24 accounting methods differ is that we're doing  
25 this 1998 simulated accounting for the leakage

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1 on the AMCs while we're using the real leakage  
 2 in the aquifer for the physical credits?  
 3 **A. Correct.**  
 4 Q. And so rather than some premise that all of the  
 5 math needs to be reworked to figure out why  
 6 those numbers are different, I think the actual  
 7 question is do you think it's reasonable to  
 8 premise this aspect of the AMC accounting on the  
 9 1998 level and to use that 5 percent assumption  
 10 for the reason that we don't want to penalize  
 11 the City for not pumping the aquifer down to the  
 12 1998 level?  
 13 **A. Yes, we -- we felt it reasonable.**  
 14 Q. Mr. Letourneau, does the City have any legal  
 15 right to impair senior water right holders?  
 16 **A. No.**  
 17 Q. Counsel asked you a question whether if we focus  
 18 on when credits are drawn, recovery of credits  
 19 reduces water in the aquifer. Do you recall  
 20 that?  
 21 **A. Yes.**  
 22 Q. And that's true of all credits, isn't it?  
 23 **A. Yes.**  
 24 Q. That's true for the physical credits that exist  
 25 today, isn't it?

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1 **A. That's true.**  
 2 Q. It's true when any party exercises their native  
 3 rights too, isn't it?  
 4 **A. That's true.**  
 5 Q. As a -- as a result, should we all not pump  
 6 anything out of the aquifer in order to not  
 7 reduce the water level?  
 8 **A. No.**  
 9 Q. That would make it difficult to make a useful  
 10 distribution of the water, wouldn't it?  
 11 **A. We need to put water to beneficial use, it's in  
 12 the public interest.**  
 13 Q. Several times as we were talking about practical  
 14 saturated thickness issues, you had responded to  
 15 counsel that the MODFLOW model takes account of  
 16 well logs, and then that line of questioning was  
 17 promptly not pursued. So tell us what you mean  
 18 by that, how does the MODFLOW model take account  
 19 of well logs?  
 20 **A. Well, it's my understanding based on what the  
 21 modelers tell me that the USGS, when they  
 22 develop the model, they use all of the data that  
 23 they have; and so I would think that this  
 24 MODFLOW model, again, I would have to ask Sam  
 25 Perkins or David Barfield if it took into**

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1 **account all of the well logs. You know, so I  
 2 don't know how many hundreds of well logs are in  
 3 there, but the USGS model would take those into  
 4 account, I believe.**  
 5 Q. On the first of the four observation well sites  
 6 that Counsel picked out, which I'm thinking was  
 7 perhaps the index well 2C, if I got that  
 8 correctly in my notes, Counsel had asked you if  
 9 the issues with the difference in total  
 10 saturated thickness and practical saturated  
 11 thickness in that well gave you a concern, and  
 12 you said it didn't give you a concern unless  
 13 there were similar problems in the rest of the  
 14 aquifer. Why, I will just ask you to explain  
 15 that answer further since Counsel pretty much  
 16 left off there?  
 17 **A. If I recall correctly, that particular well was  
 18 clear to the north of the well field, and you  
 19 would anticipate something at the edge of the  
 20 well field to not represent what's in the heart  
 21 of the well field. So I -- I would anticipate  
 22 something clear to the edge of the well field to  
 23 have less saturated thickness, because if it's  
 24 still good, the well field would have expanded  
 25 beyond that area until it got to a boundary that**

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1 **wasn't good.**  
 2 Q. Then with respect to two of the other  
 3 observation wells, the wells in 10C and cell 21,  
 4 Counsel asked you similar questions of, well,  
 5 you know, what if we only considered that index  
 6 cell in isolation, would you consider that that  
 7 raised an issue, and you indicated that it  
 8 would. So let me ask you for each of those two  
 9 index wells, what if we didn't look at the well  
 10 in that index well solely in isolation, would it  
 11 still raise an issue?  
 12 **A. No, I think it would -- I mean, I'm counting on  
 13 the model taking into account all of the well  
 14 logs in the area.**  
 15 Q. Mr. Letourneau, in your experience with wells  
 16 and lithology logs, have you ever known a  
 17 driller's log to be wrong in terms of describing  
 18 lithology or depth?  
 19 **A. Yes.**  
 20 Q. Have you ever seen an instance where a driller  
 21 called a unit by mistake such as mislabeling  
 22 clay shale?  
 23 **A. Yes.**  
 24 Q. Are clay layers uniform across an unconsolidated  
 25 aquifer?

1 **A. No.**  
2 Q. So drilling at one location, would that give you  
3 any idea of the lithographic conditions for that  
4 entire index cell?  
5 **A. No.**  
6 Q. Even if the well is smack dab in the middle,  
7 it's just one data point, isn't it?  
8 **A. That's correct.**  
9 Q. The well in index cell 01, do you remember where  
10 that well was located in relationship to the  
11 cell boundary?  
12 **A. I -- no, I don't remember if it was clear to the**  
13 **north of those wells, I don't remember the**  
14 **labels, Brian.**  
15 Q. Okay. It's probably not worth going back to  
16 review the document in detail.  
17 **A. Okay.**  
18 Q. In your experience as a geologist and based on  
19 your experience at DWR, do you think that a  
20 single well log represents a four-square-mile  
21 area?  
22 **A. No.**  
23 Q. You were also here during Mr. Clement's  
24 testimony, correct?  
25 **A. Correct.**

1 the chief engineer at the time of the 2005  
2 permits didn't have a lot of the material that  
3 is present in the City's proposal in terms of  
4 modeling results. The language in the permit  
5 that says that the public interest will be  
6 protected if the water levels don't go below the  
7 1993 index levels, does that language say that  
8 the public interest won't be protected if the  
9 index levels are lowered?  
10 **A. No.**  
11 Q. During questions on the accounting method,  
12 Counsel referred you to an interrogatory  
13 response, I believe it was DWR's response to  
14 interrogatory number 10 in Exhibit 11, and there  
15 was language that Counsel, again, asked you  
16 questions about, language that said the  
17 accounting methods would not change. But if you  
18 look back to the start of that question, when  
19 you look back to the actual question, wasn't the  
20 question -- the question that was being answered  
21 in that interrogatory response a question about  
22 accounting for the water entering and leaving  
23 the aquifer?  
24 **A. Where is that at, Brian, I'll look?**  
25 Q. Exhibit 11, response to interrogatory number 10.

1 Q. Do you remember the part of Mr. Clement's  
2 testimony where he described the model reflects  
3 interpretable bedrock based on USGS  
4 incorporating well log information from multiple  
5 resources?  
6 **A. Yes.**  
7 Q. Is that your understanding as well?  
8 **A. Yes.**  
9 Q. And do you recall also Mr. Clement's testimony  
10 that the saturated thickness values are average  
11 values based on the USGS model?  
12 **A. Yes.**  
13 Q. Can you draw conclusions about the practical  
14 saturated thickness for a four-square-mile index  
15 cell based on a single well?  
16 **A. No.**  
17 Q. During discussion of 1993 and the 1993 levels,  
18 you had observed in February that there weren't  
19 complaints in '93, and today I think you said or  
20 in '92 and '91. And Counsel asked you that  
21 doesn't mean that there won't be complaints, and  
22 my question is it doesn't mean there will be,  
23 does it?  
24 **A. Correct.**  
25 Q. Mr. Oleen had brought out in questioning that

1 **A. That's correct, please explain in detail the**  
2 **accounting method that will be used to determine**  
3 **water entering and leaving the aquifer with the**  
4 **AMC proposal.**  
5 Q. Okay. And as indicated by DWR's response, the  
6 accounting method to do that is not going to  
7 change, correct, with the proposal?  
8 **A. That's correct.**  
9 Q. Mr. Letourneau, in DWR's view, are AMCs passive  
10 recharge credits?  
11 **A. No.**  
12 Q. Counsel asked you some -- some hypotheticals  
13 about, gee, what if the source water was from  
14 El Dorado, what if the source water was from the  
15 Big Ark. Mr. Letourneau, does the City have any  
16 permit that enables it to inject water from  
17 El Dorado or water from the Big Ark into the  
18 aquifer?  
19 **A. No.**  
20 Q. And is that part of what distinguishes AMCs as a  
21 use of source water from the Little Ark?  
22 **A. That's correct.**  
23 Q. Back to minimum desirable streamflow. I think  
24 you indicated that -- that as DWR evaluated the  
25 proposal and its likely impact on minimum

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1 desirable streamflow, you believe minimum  
 2 desirable streamflow will actually be helped by  
 3 the proposal because as a result of the fuller  
 4 aquifer, there will be more water flowing out of  
 5 the aquifer into the adjacent stream, correct?  
 6 **A. That's what we think.**  
 7 Q. And so you did evaluate that issue of minimum  
 8 desirable streamflow, and you actually saw that  
 9 as part of the public benefit of the proposal,  
 10 correct?  
 11 **A. That's correct.**  
 12 Q. And that line of reasoning would hold true even  
 13 as far as going into a drought with a fuller  
 14 aquifer, wouldn't it?  
 15 **A. Oh, absolutely.**  
 16 Q. There was a whole line of questions about the  
 17 120,000 acre-foot cap asked in a way that  
 18 intimated that this would be some kind of change  
 19 for water quality purposes or minimum desirable  
 20 streamflow. Currently, is there a cap?  
 21 **A. No, no cap.**  
 22 Q. If -- if the City could accumulate 200,000  
 23 acre-feet in credits, could the City then  
 24 withdraw that under current permit conditions  
 25 14,000 acre-feet annually?

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1 **A. 19,000.**  
 2 Q. I'm sorry, 19,000, thank you?  
 3 **A. 19,000 acre-feet annually, that's correct.**  
 4 Q. So I think you had tried to allude to this in  
 5 your earlier testimony and -- and it somehow was  
 6 missed or beshadowed. But to the extent that  
 7 the City's right to withdraw that 19,000  
 8 acre-feet of credits annually already exists  
 9 under the current permits, any minimum desirable  
 10 streamflow analysis that that called for needed  
 11 to be done in Phase I and Phase II, didn't it?  
 12 **A. That's correct.**  
 13 Q. Any impact on chloride migration needed to be  
 14 done in Phase I or Phase II, didn't it?  
 15 **A. Yes.**  
 16 Q. And whether or not there's 120,000 acre-foot  
 17 cap, the significant fact is the City can draw  
 18 that 19,000 acre-feet a year, correct?  
 19 **A. That's correct.**  
 20 Q. That's what will have an impact or not have an  
 21 impact on minimum desirable streamflow and  
 22 chloride migration, correct?  
 23 **A. That's correct.**  
 24 Q. And in terms of trying to present that as some  
 25 kind of a horrible that's only a change in the

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1 current proposal, that's not accurate, is it?  
 2 **A. That's correct.**  
 3 Q. Just as a matter of cleanup, Counsel asked you  
 4 some questions about creation of credit, and I  
 5 think you had -- had indicated that in a sense  
 6 physical credits are created at the point of  
 7 injection and that AMCs are created when water  
 8 is treated and taken to town. But in terms of  
 9 knowing what number of credits are accumulated,  
 10 when does the City actually recognize those,  
 11 when can we tell if we've got credits from  
 12 physical recharge or under the proposal from  
 13 AMCs?  
 14 **A. Brian, I think that happens as soon as the water**  
 15 **is treated and the City makes the decision if**  
 16 **there's room in the aquifer or not.**  
 17 Q. So but -- but my question relates to recognition  
 18 of that. In terms of when that is booked for  
 19 the City, when the City would be allowed to  
 20 potentially recover that credit, do we not have  
 21 to wait for the annual accounting report?  
 22 **A. Oh, yes.**  
 23 Q. Ms. Wendling asked you a question about if the  
 24 City wanted to -- wanted to raise that 19,000  
 25 acre-foot annual limit, is that set in stone or

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1 could the City do that, and I think you  
 2 indicated that the City could make a future  
 3 request to increase that amount. If the City  
 4 did that, would that have to be done by the  
 5 filing of a permit application and the  
 6 full-blown permit approval process?  
 7 **A. Yes.**  
 8 Q. And so if you needed to look at the impact on  
 9 chloride migration or the impact on minimum  
 10 desirable streamflow of raising that annual  
 11 number, then DWR could do that at the time that  
 12 that permit application was adjudicated,  
 13 correct?  
 14 **A. That's correct.**  
 15 Q. Ms. Wendling's discussion of the regulatory  
 16 change in 2016 that altered the definition of  
 17 minimum index level, we saw that whole group of  
 18 comments where people thought it would have  
 19 horrible consequences. What impact has that  
 20 regulatory change had to date?  
 21 **A. Nothing to date.**  
 22 Q. In the proposal that the City submitted, does  
 23 the City propose to dewater the aquifer to  
 24 bedrock?  
 25 **A. No, absolutely not.**

1 Q. Ms. Wendling asked you a question about drought  
2 recovery to the effect that since it took six or  
3 seven years to recover from the drought of 2011,  
4 '12, wouldn't it be reasonable to study recovery  
5 from the projected eight-year drought, and I  
6 think you indicated it would. Let's back up a  
7 little bit, it's been six or seven years since  
8 the drought of 2011 and '12, but did it take  
9 that full six to seven period to recover from  
10 that drought?

11 **A. You know, Brian, I'm not sure when the water  
12 level came back, I'd have to ask.**

13 Q. And I think you further indicated in response to  
14 that line of questioning that you thought the  
15 modeling showing the 80 percent saturated  
16 thickness remaining at the end of year eight was  
17 an adequate indication that we would have decent  
18 recovery?

19 **A. Yes, that's correct.**

20 Q. With respect to the questions that Mr. Oleen  
21 asked about the distinction between domestic  
22 wells and other wells and the draft permit  
23 conditions in paragraphs 12 and 13 that speak  
24 specifically to domestic wells, in addition to  
25 the factors that Mr. Oleen brought out, is it

1 also your experience that domestic wells in the  
2 aquifer tend to be shallower than irrigation  
3 wells?

4 **A. Yes, shallower and they don't have as much rate  
5 requirements.**

6 Q. And so in just comparing those characteristics,  
7 domestic wells could be more susceptible to  
8 impacts from the proposal than an irrigation  
9 well would like to be?

10 **A. Yes.**

11 Q. Ms. Wendling asked you if pumping a hole in the  
12 aquifer was mandated by the City's permit, and  
13 you concurred with her that it is not, but for  
14 practical purposes, if the City wants physical  
15 recharge credits under the permit conditions  
16 that exist today, will the City have to pump  
17 down the aquifer to accomplish that?

18 **A. Yes.**

19 **MR. MCLEOD:** I don't have further  
20 questions for the witness.

21 **PRESIDING OFFICER:** Okay.

22 Mr. Stucky.

23 **MR. STUCKY:** Thank you.

24 //

25 //

1 RE CROSS EXAMINATION

2 **BY MR. STUCKY:**

3 Q. With respect to ASR Phase I, Ms. Wendling asked  
4 you some questions with respect to the Division  
5 of Water Resources' opinion with regard to ASR  
6 Phase I, do you recall some of those questions?

7 **A. Yes.**

8 Q. I would ask that you turn to Exhibit 78 in the  
9 notebooks before you, I think it's probably the  
10 very last volume, Volume VI, I believe. Are you  
11 there?

12 **A. Yes, I'm there.**

13 Q. Could you turn to -- well, let me first ask you  
14 this: With respect to ASR Phase I, when it  
15 comes -- came to that hearing with regard to ASR  
16 Phase I, do you know whether or not the Division  
17 of Water Resources took an official opinion for  
18 or against ASR Phase I?

19 **A. I don't know.**

20 Q. I would ask that you -- well, let me first of  
21 all back up. With respect to Exhibit 78, would  
22 you -- would you recognize this as a copy of the  
23 official transcript for the ASR Phase I hearing?

24 **A. Yes.**

25 Q. And, in fact, we have some official stamps on it

1 that it was received by the Kansas Department of  
2 Agriculture Legal Section on February 9, 2005.

3 Would you agree with that?

4 **A. Yes.**

5 Q. And there's another stamp that indicates it was  
6 received by the Stafford Field Office, Division  
7 of Water Resources on March 25, 2016, which I  
8 guess would be sometime later for some reason?

9 **A. That's correct.**

10 Q. So would you agree for the purposes of this  
11 record as -- for you to take a minute to look  
12 through it a little bit, would you agree that  
13 this is the official transcript for ASR Phase I?

14 **A. Yes, this is it.**

15 **MR. STUCKY:** In conferring with  
16 Mr. Oleen previous to reconvening on my  
17 questioning, it's my understanding that  
18 this transcript is actually not part of the  
19 hearing record in this case, and so I'm  
20 going to ask, because we're going to have  
21 several questions from our witnesses with  
22 regard to this transcript, I would ask this  
23 transcript be admitted at this time.

24 **PRESIDING OFFICER:** Objection?

25 **MR. OLEEN:** Oh, only one about cost,



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1 I wondered if -- I mean, what the  
 2 transcript says, I don't have reason to  
 3 object what it says. I almost wish perhaps  
 4 you could take judicial notice of it and we  
 5 wouldn't have to -- 'cause it's essentially  
 6 an entire binder, the transcript itself has  
 7 Volumes I and II, to keep down costs, I  
 8 would prefer that you take judicial notice  
 9 of it, I don't have any problem with that.  
 10 **MR. STUCKY:** And we're perfectly  
 11 comfortable with you taking judicial notice  
 12 of what's shown as Exhibit 78 and  
 13 Exhibit 79 in our notebook, we're  
 14 completely comfortable with that so long as  
 15 we can reference it in our findings of  
 16 fact.  
 17 **PRESIDING OFFICER:** Any objections  
 18 from the City or the Intervenors?  
 19 **MR. OLEEN:** If I could, before  
 20 they --  
 21 **PRESIDING OFFICER:** Yeah.  
 22 **MR. OLEEN:** -- lodge an objection, I  
 23 would point out that we do not have the  
 24 transcript for the Phase II hearing reduced  
 25 to written form. We just have a recording

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1 of that. For reasons unbeknownst to me it  
 2 was never reduced to written form. So I  
 3 don't -- I would prefer that you could take  
 4 judicial notice of both, but the fact that  
 5 you can't is part of our fault, I guess.  
 6 So I'm not objecting, I'm just making you  
 7 aware of that, and -- and other counsel to  
 8 the extent that causes them to have some  
 9 sort of objection.  
 10 **PRESIDING OFFICER:** Okay. Any  
 11 objection to judicial notice of the  
 12 transcript for the Phase I hearing?  
 13 **MS. WENDLING:** None here.  
 14 **PRESIDING OFFICER:** Mr. McLeod, do  
 15 you have objection to that?  
 16 **MR. MCLEOD:** I don't think there is  
 17 a basis for objection to either admitting  
 18 it or taking judicial notice, and the  
 19 second of those will be more cost  
 20 effective.  
 21 **PRESIDING OFFICER:** Yes, well, that  
 22 sounds pretty obvious, so I will take  
 23 judicial notice of what is labeled as GMD  
 24 Exhibit 78, it is the official transcript  
 25 of the Phase I ASR hearing that apparently

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1 took place December of 2004.  
 2 **MR. OLEEN:** And, Mr. Stucky, can you  
 3 clarify, 78 is just Volume I, 79 is Volume  
 4 II?  
 5 **MR. STUCKY:** That's correct.  
 6 **PRESIDING OFFICER:** Oh, I'm sorry,  
 7 yes, okay, clarified.  
 8 **BY MR. STUCKY:**  
 9 Q. If you could, as it's shown in Exhibit 78 in our  
 10 notebook, just for simplicity, could you turn to  
 11 page 10 of this official transcript? And,  
 12 actually, let's back all the way up, there's  
 13 someone speaking on page 10, I want to back all  
 14 the way up to make it clear who is speaking.  
 15 Can you tell me, can you look at that transcript  
 16 and say who's speaking towards the top of  
 17 page 10, can you flip through and tell me that?  
 18 **A. Let me see. Well, I mean, it -- I think it's**  
 19 **David Pope because he talks about he has to note**  
 20 **that it's Lee Rolfs on his right and Jim Bagley**  
 21 **is to his left.**  
 22 Q. And, in fact, if you go back to what's numbered  
 23 as page 5, it says that it's Hearing Officer  
 24 Pope speaking. Is that a true statement?  
 25 **A. Yes.**

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1 Q. Let's go back to page 10. Could you read that  
 2 first sentence of that first full paragraph on  
 3 page 10?  
 4 **A. On line 4, starting on line 4?**  
 5 Q. That's right.  
 6 **A. Okay. I might note that the Division of Water**  
 7 **Resources' staff will not be providing testimony**  
 8 **for or against these applications, but Mr. Rolfs**  
 9 **here, Mr. Leland Rolfs located to my right, as**  
 10 **legal counsel for me as chief engineer, will be**  
 11 **allowed to call witnesses for the limited**  
 12 **purposes of introducing documentation from the**  
 13 **agency files pertaining to these applications.**  
 14 Q. So in other words, as it related to ASR Phase I,  
 15 the Division of Water Resources didn't take a  
 16 position either for or against ASR Phase I; is  
 17 that right?  
 18 **A. That's correct.**  
 19 Q. Same question with respect to ASR Phase II, I  
 20 think you were more heavily involved in ASR  
 21 Phase II?  
 22 **A. Yeah, not the hearing, I didn't go -- I didn't**  
 23 **attend the hearing. Of course, I don't think**  
 24 **anybody attended that hearing, very many people**  
 25 **did, but I was -- yeah, I was more aware of**

1 **Phase II.**

2 Q. Do you know if the Division of Water Resources,  
3 based on your awareness of what did happen at  
4 that hearing, do you know if the Division of  
5 Water Resources took a position for or  
6 against --

7 **A. No.**

8 Q. -- ASR Phase II?

9 **A. No, we -- we did not take a stance.**

10 Q. So at least in contrast to the ASR Phase I  
11 hearings and the ASR Phase II hearings, this  
12 hearing is unique in the sense that the Division  
13 of Water Resources is actually taking a stand  
14 for or against a proposal. Is that a true  
15 statement?

16 **A. Yes, I would -- I would say yes. And kind of a  
17 difference here, David, sorry to interrupt you,  
18 this hearing wasn't even required; we wanted to  
19 have this particular hearing, slash, trial, in  
20 part, to get additional information.**

21 Q. In attachment F of the City's black notebook,  
22 there were some PDSI numbers that were discussed  
23 by Ms. Wendling. And in 1991, it's indicated  
24 that the PDSI was negative 30.85 in 1991; is  
25 that right?

1 numbers from the years prior; is that right?

2 **A. That's correct.**

3 Q. Ms. Wendling asked you some questions about when  
4 ASR credits are perfected. Do you recall those  
5 discussions?

6 **A. Yeah, I do.**

7 Q. So with respect - I think I'm maybe a little  
8 unclear here - with respect to an aquifer  
9 maintenance credit, when is it perfected? Is  
10 what is perfected a municipal use or a recharge  
11 credit, which is perfected?

12 **A. There's two types of perfection. It's the  
13 artificial recharge, so whenever that AMC would  
14 be counted as a recharge credit, then it would  
15 be perfected for artificial recharge. But then  
16 when it would be actually diverted for municipal  
17 use, it would be perfected for municipal use.**

18 Q. So I want to clarify what the steps are for when  
19 an aquifer maintenance credit is perfected.  
20 When we take overflow water from the Little  
21 Arkansas River and we treat it and send it  
22 directly to the City of Wichita, is there a  
23 perfection that occurs at that point when that  
24 source water is used directly in the City?

25 **A. Yes, it would be perfected as artificial**

1 **A. That's correct.**

2 Q. And, in fact, back in 1991, you were employed by  
3 the Division of Water Resources; is that  
4 correct?

5 **A. That's correct.**

6 Q. We had the question asked with respect to  
7 whether there were complaints in 1993 with  
8 respect to impairment in the Equus Beds Aquifer.  
9 Do you recall those discussions?

10 **A. Yes.**

11 Q. Were there complaints of users in the Equus Beds  
12 Aquifer back in 1991?

13 **A. Not that I'm aware of. I don't recall any.**

14 Q. Do you recall any in 1992?

15 **A. No, I don't.**

16 Q. And as you're sitting there today, I just want  
17 to clarify your testimony, although you're not  
18 aware of any complaints, you're also not aware  
19 that -- whether any were made at all; is that  
20 right?

21 **A. That's correct.**

22 Q. And there was a question about the fact that it  
23 rained a lot in 1993, but the effects that we  
24 would have seen with the 1993 levels, that would  
25 have been based on some of those negative PDSI

1 **recharge.**

2 Q. At the time that the source water is taken  
3 directly from the Little Arkansas River, treated  
4 and sent to the City, you're saying that there's  
5 a perfection of artificial recharge at that  
6 point?

7 **A. Yes, correct.**

8 Q. So what happens, then, when these aquifer  
9 maintenance credits are withdrawn at a later  
10 time and water is taken out of the aquifer at a  
11 later time, is there any kind of perfection that  
12 occurs at that time?

13 **A. Under a different authority, under a different  
14 permit, it's perfected as a municipal use. You  
15 have to get the recharge credit, which is  
16 artificial recharge, to be able to use it for  
17 municipal use later.**

18 Q. Let me just back up here, then, I'm having some  
19 trouble here. With ASR Phase I -- well,  
20 actually ASR Phase II order, the City of Wichita  
21 could take water directly from the Little  
22 Arkansas River right now, without this proposal  
23 being adopted, the City of Wichita could take  
24 water from the Little Arkansas River, treat it  
25 and use it in the City right now; is that

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1 correct?

2 **A. Correct, but that's not source water, that's**

3 **surface water taken directly to town.**

4 Q. Okay. But under this current -- under the

5 current ASR Phase II structure, the City of

6 Wichita could take water from the Little

7 Arkansas River, treat it, and use it directly in

8 the City of Wichita; is that right?

9 **A. Correct.**

10 Q. And, in fact, we had some testimony from the

11 prior witnesses where they testified that, in

12 fact, some of this has already occurred in the

13 past where the City of Wichita has taken water

14 from the Little Arkansas River, treated it, and

15 sent it directly to the City for municipal use

16 when the water -- or the aquifer was full. Do

17 you recall that?

18 **A. Absolutely, yes.**

19 Q. So my question is this: When this water, under

20 the current ASR Phase II order, is taken from

21 the Little Arkansas River, treated, and sent

22 directly to the City for use, is that consumed

23 as a municipal use under ASR Phase II?

24 **A. Not under ASR Phase II, that is a direct surface**

25 **water diversion to the City. I don't believe**

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1 **that's part of ASR.**

2 Q. Well, my question is this: What type of use is

3 made of that water when it's taken to the City?

4 **A. It's municipal use.**

5 Q. That's my question.

6 **A. Okay.**

7 Q. So now let's jump back to the aquifer

8 maintenance credit proposal, how is it different

9 with respect to an aquifer maintenance credit

10 proposal? You told me under that same scenario

11 if the water is taken from the Little Arkansas

12 River during a flood, treated, and sent to the

13 city, under ASR Phase II, that's used for

14 municipal purposes, how is it different with

15 respect to an aquifer maintenance credit, why

16 would that water not be viewed as a municipal

17 use at that point?

18 **A. Well, because the City would treat it, take it**

19 **to the infrastructure, and look to see if**

20 **there's space in the aquifer. If there's not**

21 **space in the aquifer, then they take it directly**

22 **to town and get credit for it as an A -- AMC.**

23 **If they treat surface water and it's not a**

24 **source water and they take it directly to town,**

25 **that's the surface water right -- that's the**

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1 **dual use surface water of that particular**

2 **permit.**

3 Q. So --

4 **A. This is the proposed change.**

5 Q. Okay. So just so I'm clear, with the aquifer --

6 when an aquifer maintenance credit is

7 accumulated, when that source water is taken

8 from the Little Arkansas River, treated, and

9 sent to the City to be used, is it consumed for

10 a municipal purpose at that point?

11 **A. It's consumed when it gets to town, yes.**

12 Q. Okay. So it's similar to an ASR Phase II direct

13 diversion, if you will, in the sense that the

14 end use at that point is still for municipal

15 purposes, correct?

16 **A. That's correct.**

17 Q. So then that brings me to my question --

18 **PRESIDING OFFICER:** I'm sorry, I

19 thought I had this clear. My questions

20 earlier about perfection were not about the

21 proposal; they were about the existing --

22 **A. Okay.**

23 **PRESIDING OFFICER:** -- water right,

24 okay, the 46,627 dual use, and I think I

25 understand that. So if I understand what

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1 you're saying, even though it sounds like

2 the same physical thing would happen where

3 surface water is taken from the -- under

4 the AMC proposal, surface water is taken

5 from the Little Ark, treated, sent right to

6 the City, that sounds like what takes place

7 during the current surface water diversion?

8 **A. That's correct.**

9 **PRESIDING OFFICER:** But under the

10 AMC proposal, that activity would not

11 perfect municipal use, that would perfect

12 recharge --

13 **A. No, it would --**

14 **PRESIDING OFFICER:** -- artificial

15 recharge?

16 **A. Under the -- not the proposal, we're not talking**

17 **about the proposal.**

18 **PRESIDING OFFICER:** I'm asking about

19 the proposal.

20 **A. Okay.**

21 **PRESIDING OFFICER:** I'm now moving

22 on to what I didn't ask before which is how

23 does perfection work with this AMC --

24 **A. Okay.**

25 **PRESIDING OFFICER:** -- concept?

1 **A. Under the proposal, yes, that scenario would**  
2 **perfect an AMC because it didn't require the**  
3 **City to pump the hole.**

4 **PRESIDING OFFICER:** Okay. Although  
5 it's the same physical behavior as --

6 **A. Absolutely.**

7 **PRESIDING OFFICER:** -- the municipal  
8 use?

9 **A. Yes.**

10 **PRESIDING OFFICER:** So the -- and  
11 forgive me, I know my brain's getting a  
12 little slow here this time of day, but if  
13 the -- the surface water that's being taken  
14 out of the Little Ark under the existing  
15 dual use permit that will then be used to  
16 perfect municipal use, is that the water  
17 that we're saying now is also going to  
18 generate AMC credits?

19 **A. Credit but it won't perfect municipal use in the**  
20 **second scenario.**

21 **PRESIDING OFFICER:** So -- so taking  
22 water from the Little Ark, treating it,  
23 sending it straight to the City perfects  
24 municipal use already?

25 **A. Right now, yes.**

1 **credits. I mean, you know it as you're treating**  
2 **that surface water whether there's room in the**  
3 **aquifer to put physical recharge credits in or**  
4 **not. So that -- that's -- so if there's room in**  
5 **the aquifer, they will create a physical**  
6 **recharge credit, and so they perfect a recharge**  
7 **credit at that point. And I have to say they**  
8 **perfect artificial recharge, that's the**  
9 **beneficial use.**

10 **So under this proposal, it's a functioning**  
11 **equivalent, AMC is a functioning equivalent of a**  
12 **physical recharge credit. So if the City pulls**  
13 **surface water and there's not room in the**  
14 **aquifer, then that goes to town but the City**  
15 **perfects artificial recharge, not municipal use.**

16 **PRESIDING OFFICER:** Okay. Thank you  
17 for bearing with me.

18 **A. Absolutely.**

19 **PRESIDING OFFICER:** I'm trying to  
20 make it very clear in my own head because I  
21 know I'm going to come back to this and go,  
22 what was that? So under the current  
23 permit, the use of the surface water in the  
24 City perfects municipal use --

25 **A. Correct.**

1 **PRESIDING OFFICER:** Under the  
2 current proposal, it would also perfect  
3 artificial recharge?

4 **A. It only perfects artificial recharge, it does**  
5 **not perfect municipal.**

6 **PRESIDING OFFICER:** So that would  
7 reduce the perfection under municipal?

8 **A. Correct.**

9 **PRESIDING OFFICER:** Okay. That  
10 helps. I lost my --

11 **A. Well, it is really -- this is a -- it's an**  
12 **accounting change, and so if an AMC is being**  
13 **generated and AMC is the only thing perfected**  
14 **under this proposal, that water is taken**  
15 **directly to town but it's not perfected as a**  
16 **municipal use.**

17 **PRESIDING OFFICER:** So the  
18 determination as to whether it perfects for  
19 municipal use or artificial recharge, that  
20 question is answered by whether or not  
21 there was room in the aquifer?

22 **A. Correct.**

23 **PRESIDING OFFICER:** Which you don't  
24 know until later?

25 **A. Well, you know it as you're generating the**

1 **PRESIDING OFFICE:** -- does not  
2 generate any recharge credits?

3 **A. That's correct. But then, Madam Hearing**  
4 **Officer, to add to that, not to confuse it, but**  
5 **if that same physical water is taken to town but**  
6 **if the AMC proposal is approved, it will be**  
7 **perfected as a artificial recharge and not**  
8 **municipal.**

9 **PRESIDING OFFICER:** Instead of?

10 **A. Instead of.**

11 **PRESIDING OFFICER:** That was the  
12 key.

13 **A. Uh-huh.**

14 **PRESIDING OFFICER:** Okay, thank you,  
15 sorry to interrupt.

16 **BY MR. STUCKY:**

17 **Q.** Mr. Letourneau, you have before you the City's  
18 proposal in that black notebook, correct?

19 **A. That's correct.**

20 **Q.** And you've read through that proposal  
21 previously; is that correct?

22 **A. Yes.**

23 **Q.** Could you point to me in that proposal where  
24 it's explained that when this water is sent  
25 directly to the City instead of being used for

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1 municipal use, it's only going to be used for a  
 2 recharge perfection purpose, could you  
 3 explain -- or tell me where that's cited in the  
 4 proposal?  
 5 **A. Oh, not without -- not without a lot of review.**  
 6 Q. Well, I tell you what, unfortunately, it looks  
 7 like we're not going to finish today, so would  
 8 you be able to look at that proposal overnight  
 9 and tell me where --  
 10 **A. Well, maybe could --**  
 11 Q. -- in that proposal it's stated?  
 12 **A. Well, I mean, maybe could you just get to the**  
 13 **line of questioning, I mean, or what -- what is**  
 14 **it --**  
 15 Q. Well, I'll ask you this: In fact, that's not  
 16 stated in the proposal --  
 17 **A. Okay.**  
 18 Q. -- is that true?  
 19 **A. I -- I don't know, I don't think so. I mean,**  
 20 **that -- I would just think that that's how the**  
 21 **permits would be perfected.**  
 22 Q. So in other words, although it's not stated in  
 23 the proposal, this is your analysis of how we  
 24 can draw a distinction between the municipal use  
 25 found in ASR Phase II water sent directly to the

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1 City and the distinction from the water sent  
 2 directly to the City with the AMC proposal,  
 3 that's your distinction, correct?  
 4 **A. That's my distinction, yes.**  
 5 Q. And, in fact, that distinction isn't made in the  
 6 proposal; is that true?  
 7 **A. I'll take your word for it that it's not.**  
 8 Q. Okay. But isn't it possible, then, with the AMC  
 9 credit proposal that we have two beneficial uses  
 10 that are made of the water at the same time? So  
 11 in other words, this water is used in the City  
 12 for municipal purposes, and at the same time,  
 13 isn't it possible that we have a recharge credit  
 14 that's created at the same time?  
 15 **A. Yes.**  
 16 Q. So let me then ask you, at the point -- under  
 17 the aquifer maintenance credit proposal, what  
 18 happens if all these credits are accumulated but  
 19 they're never withdrawn, does that -- does that  
 20 impact the perfection process at all?  
 21 **A. Yes, it sure could. I mean, you -- you've got a**  
 22 **set time frame, we have reasonable extensions in**  
 23 **time to perfect, but these recharge credits**  
 24 **leak, and so if nothing is ever used, then the**  
 25 **recharge credits go away.**

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1 Q. So what you're telling me as you sit here today  
 2 and your testimony is that when these aquifer  
 3 maintenance credits are withdrawn at a later  
 4 time that that may or may not impact the  
 5 perfection process?  
 6 **A. It -- it perfects them when they're withdrawn at**  
 7 **a later time. You have to -- when you put water**  
 8 **to beneficial use under a permit to proceed is**  
 9 **when you perfect the water right.**  
 10 Q. So -- so there's -- and what would you call that  
 11 type of perfection when these AMC credits are  
 12 withdrawn at a later time, what use is being  
 13 made of the water at that point?  
 14 **A. That's municipal use.**  
 15 Q. So in other words, when under the aquifer  
 16 maintenance credit proposal, as it relates to  
 17 perfection, to make sure I understand this, when  
 18 the water is sent directly to the City for  
 19 municipal use, because of the nature of the  
 20 existing permits, that water is consumed both  
 21 for municipal purposes and a new type of  
 22 recharge credit is accumulated; is that correct?  
 23 **A. It's perfected for artificial recharge but not**  
 24 **perfected for municipal. It's used for**  
 25 **municipal, but it wouldn't be perfected for**

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1 **municipal.**  
 2 Q. Okay. And so you're saying that the point at  
 3 which it's perfected for municipal use is when  
 4 those AMC credits are withdrawn at a later time?  
 5 **A. Correct.**  
 6 Q. Okay. And once again, this is not part of the  
 7 proposal specifically, but it's your analysis;  
 8 is that true?  
 9 **A. Yeah, it seems to be like water rights 101.**  
 10 Q. Right now, the reason --  
 11 **PRESIDING OFFICER:** I'm sorry, I got  
 12 to ask this or I'll lose it, so taking the  
 13 surface water to town helps perfect  
 14 artificial recharge and then using those  
 15 credits perfects municipal use?  
 16 **A. Correct.**  
 17 **PRESIDING OFFICER:** So the same  
 18 behavior perfects two different uses?  
 19 **A. Correct.**  
 20 **PRESIDING OFFICER:** Okay.  
 21 **MR. STUCKY:** You ready for me?  
 22 **PRESIDING OFFICER:** Yes, I'm sorry,  
 23 go ahead.  
 24 **BY MR. STUCKY:**  
 25 Q. I'll go ahead and shift focuses to the concept

1 of impairment. And you were asked some  
2 questions about the determinations made by the  
3 Division of Water Resources with respect to  
4 impairment, and I heard you draw a distinction  
5 between well-to-well impairment on one hand  
6 versus the impairment that has to do with the  
7 overall raising or lowering of the water level.  
8 Was that distinction made?

9 **A. Regional impairment, yes.**

10 Q. Am I correct that when it comes to well-to-well  
11 impairment that, for lack of a better term, the  
12 province of the Division of Water Resources is  
13 to decide?

14 **A. Yes.**

15 Q. In fact, the Groundwater Management District can  
16 make recommendations in that regard, but the  
17 ultimate decision making authority lies with the  
18 Division of Water Resources; is that right?

19 **A. That's correct.**

20 Q. But what about this idea of the overall  
21 impairment of the water table, would you agree  
22 with me that with respect to the overall  
23 impairment of the water table, there's, in fact,  
24 a regulation in place that indicates that that  
25 falls within the province of the Groundwater

1 Q. Just a minor aspect of cleanup, I think that  
2 Mr. Oleen asked you a question about spacing for  
3 irrigation wells, and there was a question with  
4 regard to the level of spacing that's needed,  
5 and I think he might have said something with  
6 reference to 660 feet. But would you agree that  
7 the spacing requirement for irrigation is  
8 actually 1,320 feet?

9 **A. Yes, and I thought we talked about domestic. I  
10 don't recall the irrigation, but you're correct,  
11 660 for domestic and 1320 for irrigation.**

12 Q. You indicated that with respect to well spacing  
13 it's ultimately the Division of Water Resources'  
14 decision with regard to well spacing, correct?

15 **A. Correct, chief engineer.**

16 Q. But you would agree with me that it's incumbent  
17 upon the Groundwater Management District to make  
18 a recommendation in that regard to the Division  
19 of Water Resources; is that right?

20 **A. That's right.**

21 Q. You've worked for the Division of Water  
22 Resources a long time, have you not?

23 **A. I have.**

24 Q. In your experience, the Groundwater Management  
25 District has made a lot of recommendations --

1 Management District?

2 **A. What -- which one of these are rules? I want to  
3 find our rules.**

4 Q. Can you turn with me to K.A.R. 5-4-1(a)?  
5 **PRESIDING OFFICER:** Which one are we  
6 looking at?

7 **A. It's our impairment rules.**

8 **MR. STUCKY:** It's going to be in  
9 Exhibit 22. It's on page 71 of Exhibit 22.

10 **PRESIDING OFFICER:** Okay.

11 **A. And, yes, David, that -- it does talk about  
12 impaired -- prior right being impaired due to a  
13 regional lowering of the water table, and (b)(1)  
14 talks about if the area of complaint is located  
15 within the boundaries of a groundwater  
16 management district, the GMD Board shall  
17 recommend steps necessary to satisfy senior  
18 water rights.**

19 Q. So in other words, when we're talking about a  
20 general regional lowering or -- lowering of the  
21 water table, if we're in a groundwater  
22 management district, it's the job of the GMD to  
23 make a recommendation in that regard. Is that a  
24 true statement?

25 **A. That's true.**

1 the Equus Beds Groundwater Management District  
2 No. 2 has made a lot of recommendations to the  
3 Division of Water Resources with regard to well  
4 spacing and spacing waivers, have they not?

5 **A. That's correct.**

6 Q. For our purposes, would you agree with me that  
7 the vast majority of the time, the Division of  
8 Water Resources has accepted the recommendation  
9 of the GMD in that regard?

10 **A. Yes.**

11 Q. In fact, can you even remember very many times  
12 when the GMD's well spacing recommendations were  
13 not accepted?

14 **A. A handful. Yeah, just a handful.**

15 Q. Just a handful in the context of hundreds over  
16 the years, correct?

17 **A. That's correct.**

18 Q. So at least in that context, the recommendations  
19 that are made by the GMD because they're the  
20 ones on the local level that are managing the  
21 aquifer, at least in that context, would you  
22 agree that the recommendations made by the GMD  
23 carry, at least, some weight --

24 **A. Oh, yeah.**

25 Q. -- when it comes to the Division of Water

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1 Resources?  
 2 **A. Yes.**  
 3 Q. Would you agree that the recommendations made by  
 4 a local GMD when it comes to well spacing would  
 5 carry a lot of weight to the Division of Water  
 6 Resources?  
 7 **A. Yes.**  
 8 Q. There was a question asked by Mr. Oleen where he  
 9 said something about how it's difficult to  
 10 impose limitations on the City during a drought  
 11 because a drought is not predictable. Did I  
 12 hear the question correctly?  
 13 **A. That's correct, yes.**  
 14 Q. But isn't the drought modeling and predictions  
 15 exactly what this hearing is about?  
 16 **A. Well, yeah, but we don't know when the drought**  
 17 **starts.**  
 18 Q. But isn't this whole -- this whole hearing based  
 19 on the notion of trying to predict what could  
 20 occur during a drought and how to deal with it?  
 21 **A. Yes.**  
 22 Q. So in the sense this hearing is about trying to  
 23 predict what a drought is about and how to deal  
 24 with it, wouldn't you agree that at least a  
 25 discussion on how we can put protections in

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1 place to ensure all water users are protected,  
 2 wouldn't you agree that trying to predict how  
 3 that could be done would be a useful tool or a  
 4 useful exercise?  
 5 **A. Yes, but it'd be difficult to determine when the**  
 6 **drought starts, that's the whole hang-up. I --**  
 7 **we totally agree on the drought and the**  
 8 **quantities during a drought, but we don't know**  
 9 **when -- when it starts, you don't know when that**  
 10 **happens until you're a couple years into it.**  
 11 Q. You were asked a question with regards to the  
 12 source water for aquifer maintenance credits,  
 13 and you said that the source water is the Little  
 14 Arkansas River; is that right?  
 15 **A. That's correct.**  
 16 Q. Is there a distinction between the point in  
 17 which this water is sent to the City for use and  
 18 the point at which an aquifer maintenance credit  
 19 is withdrawn from the aquifer?  
 20 **A. Well, the recharge credit withdrawn from the**  
 21 **aquifer would be the wells.**  
 22 Q. Let me ask it this way: You said that with  
 23 respect to an aquifer maintenance credit, the  
 24 source water is water taken from the Little  
 25 Arkansas River, and you told me a moment ago

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1 that during the perfection period when the  
 2 source water is sent directly to the City, we're  
 3 perfecting an artificial recharge credit at that  
 4 point; is that right?  
 5 **A. That's correct.**  
 6 Q. But would you agree with me at that point, the  
 7 source water would already -- already have been  
 8 consumed then by the City for its own municipal  
 9 purposes?  
 10 **A. Yes.**  
 11 Q. Mr. Oleen asked you a question or two, maybe  
 12 several questions, about K.A.R. 5-1-1(mmm). I  
 13 would ask that we now turn to that regulation,  
 14 which is also found in 22, Exhibit 22.  
 15 **PRESIDING OFFICER:** It's about ten  
 16 after 5:00, so maybe this topic would be  
 17 good to address now and then a stopping  
 18 point after that?  
 19 **MR. STUCKY:** Sure, whatever you  
 20 think.  
 21 **PRESIDING OFFICER:** Okay, if it  
 22 won't be too extensive?  
 23 **MR. STUCKY:** I'm going to ask about  
 24 that definition and every aspect of that  
 25 definition that flows from it so ...

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1 **PRESIDING OFFICER:** I'm willing to  
 2 go about another five minutes. If you  
 3 think that's not enough, we'll wait till  
 4 tomorrow.  
 5 **MR. STUCKY:** We can start and see  
 6 how far we get.  
 7 **PRESIDING OFFICER:** Okay, five  
 8 minutes.  
 9 **BY MR. STUCKY:**  
 10 Q. You were asked a question about the recharge  
 11 credit, and it's found in (mmm). And I was told  
 12 because that question was asked I'd be able to  
 13 ask about that definition and any aspect of that  
 14 definition that directly flows from that  
 15 definition, correct?  
 16 **A. Correct.**  
 17 **MR. OLEEN:** Object, that's not my  
 18 characterization, I asked about the verb  
 19 clause "is stored," and I limited my  
 20 queries to that verb clause, and it was my  
 21 understanding that that's what Mr. Stucky  
 22 would be limited to as well.  
 23 **MR. STUCKY:** That was not my  
 24 understanding. My understanding was if he  
 25 asked any questions about this definition I

1 would also be allowed to ask any -- about  
2 any aspects of this definition. I'm not  
3 sure how -- how we're going to allow  
4 Mr. Oleen to ask about one phrase in this  
5 definition and not allow me to then ask  
6 about all phrases in this definition.  
7 **PRESIDING OFFICER:** Well, my  
8 understanding was that his request was if  
9 you were opening the door to this  
10 regulation that then he could ask about  
11 this regulation, so I didn't -- I didn't  
12 understand the limitation that you were  
13 assuming.  
14 **MR. OLEEN:** Okay. Well, that was  
15 perhaps my fault in not making that clear.  
16 I'm -- I'm a little unnerved when  
17 Mr. Stucky says he's going to ask every  
18 question that flows from this regulation.  
19 My initial objection was to Mr. Stucky  
20 using the phrase "is stored" in his line of  
21 questioning to Mr. Letourneau. That's why  
22 I wanted to go back and discuss this verb  
23 phrase. That's all I wanted to get into,  
24 and I -- I am, again, unnerved by  
25 Mr. Stucky's statement that he's going to

1 using a term utilized by Mr. Oleen, one  
2 aspect of this definition, ask questions  
3 about it, and then preclude us from looking  
4 at this definition in a holistic sense  
5 and -- and attach meaning to each term in  
6 that definition. So I'm asking for the  
7 ability to attach meaning to each term in  
8 that definition since Mr. Oleen was able to  
9 focus on at least one term in that  
10 definition.  
11 **MR. OLEEN:** And, again, Madam  
12 Hearing Officer, I wanted to ask about that  
13 particular verb phrase because I had  
14 previously objected when Mr. Stucky used  
15 that verb phrase in the context of asking  
16 Mr. Letourneau a question about recharge  
17 credits. And -- and that's the only reason  
18 why I wanted to -- at the time, I don't  
19 believe my objection was sustained and I  
20 believe Mr. Stucky was allowed to ask the  
21 question. And so that's why I wanted to  
22 ask the question about that particular  
23 phrase because of my prior objection, his  
24 usage of it.  
25 **PRESIDING OFFICER:** Okay. I

1 ask all questions that flow from this  
2 regulation. If that was the -- if I was  
3 going to open the door that wide as opposed  
4 to the little crack that I had intended,  
5 then I would not have asked my little  
6 question about the phrase "is stored."  
7 **PRESIDING OFFICER:** We'll return to  
8 the appropriate scope of what you're  
9 allowed to do when we return tomorrow. If  
10 you want to ask about this particular  
11 phrase in the next few minutes, please do  
12 so. If not, I'm going to answer this  
13 question about how much farther you can go  
14 tomorrow morning.  
15 **MR. STUCKY:** Okay.  
16 **PRESIDING OFFICER:** You ready to --  
17 **MR. STUCKY:** No, I -- I thought --  
18 **PRESIDING OFFICER:** Do you want to  
19 pursue the "is stored in"?  
20 **MR. STUCKY:** My understanding was  
21 I'd be able to ask about this definition  
22 and the entire context of this definition,  
23 and I don't think it's proper and fair to  
24 the District, or any other party for that  
25 matter, to allow one party to cherry-pick,

1 understand your positions, I'll decide this  
2 first thing tomorrow morning. It's 5:15  
3 and we're on recess until 8:30 tomorrow  
4 morning. Adjourned.  
5 (Whereupon, the proceedings were  
6 adjourned at 5:15 p.m.)  
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C E R T I F I C A T E

STATE OF KANSAS )  
SEDGWICK COUNTY ) ss:

I, Nancy L. Rambo, a Certified Shorthand Reporter, within and for the State of Kansas, do hereby certify that the foregoing is a true and correct transcript of the proceedings had at the time and place hereinbefore set forth.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, nor am I a relative or employee of such attorney or counsel, nor am I financially interested in the action.

WITNESS my hand and official seal at Wichita, Sedgwick County, Kansas, this 17th day of March, 2020.

NANCY L. RAMBO, R.P.R., C.S.R.  
Registered Professional Reporter  
Certified Shorthand Reporter

Costs:



/	1798:10,18,18;1799:2,12;1861:2,19;1882:1;1889:15,18;1890:1,4;1891:13	1762:10 <b>acre-feet (94)</b> 1663:5;1666:21,24;1667:2,21,23;1668:9;1679:4;1686:14;1689:17;1690:18,21,23;1691:2,5,16,21,24;1693:2,9,12,17,18;1694:1,8,22;1695:10,13,20,22;1696:2,5,8,11,15,22;1697:3,21,22;1698:4,7,15,17,22;1699:8;1700:7,14,16,25;1701:9,17,24,25;1703:6,7;1761:15;1771:4,9,11;1772:15;1774:2,6,14,21;1775:17;1776:13;1800:18;1801:2,3;1812:8,11,12,13;1815:20;1821:4;1822:17;1824:25;1825:2;1829:1;1843:23,24,25;1845:3;1846:6;1847:8;1883:18,20;1884:17,21;1896:23,25;1897:3,8,18	1745:23;1755:13;1758:8;1759:10,11;1766:11;1769:10;1772:12;1783:15;1785:2;1788:6;1792:6;1798:25;1805:22,23;1813:10;1814:7;1817:20;1818:7,17,20;1819:6;1828:8;1829:2;1832:16;1839:17;1840:15;1849:6;1850:18;1853:3;1858:7;1870:1,14;1872:18;1896:2,8;1898:10;1903:18;1906:12;1908:13;1910:16;1911:20;1926:8	1766:15 <b>administer (5)</b> 1682:5;1754:25;1756:14;1818:6;1873:24 <b>administered (2)</b> 1680:16;1758:17 <b>administering (2)</b> 1680:14;1773:22 <b>administrators (1)</b> 1852:4 <b>administration (12)</b> 1754:8;1755:4,16,20,22;1757:5,8,10;1758:10,15;1876:19;1879:22 <b>administrative (2)</b> 1627:4;1790:17 <b>admit (1)</b> 1784:22 <b>admitted (4)</b> 1785:9;1787:25;1789:7;1903:23 <b>admittedly (1)</b> 1786:10 <b>admitting (1)</b> 1905:17 <b>adopt (1)</b> 1783:20 <b>adopted (4)</b> 1635:23;1704:23;1724:6;1911:23 <b>adopting (1)</b> 1784:17 <b>advancing (1)</b> 1870:6 <b>adverse (1)</b> 1784:4 <b>adversely (1)</b> 1701:1 <b>advocated (1)</b> 1723:22 <b>affect (5)</b> 1661:6;1672:15,18;1718:16;1879:11 <b>affected (2)</b> 1701:11;1881:22 <b>afraid (1)</b> 1742:22 <b>ag (1)</b> 1793:22 <b>again (49)</b> 1630:22;1635:7;1636:7;1637:12,14;1642:12;1645:24;1648:9;1659:11;1665:15;1670:16;1672:22;1673:4;1681:24;1683:10,17;1690:2;1691:7;1701:5;1714:16;1716:18;1718:13;1724:8,9;1725:22;1726:5;
// (4) 1746:24,25;1901:24,25	<b>accounted (1)</b> 1726:24 <b>accounting (37)</b> 1628:22,24;1629:3,10,18,22,24;1630:1,5,10,12,14;1687:15,17;1726:23;1734:13;1825:8,9;1860:5,10;1861:17;1862:4;1874:17;1875:3;1886:6,6;1887:17,24,25;1888:8;1894:11,17,22;1895:2,6;1898:21;1917:12 <b>accounts (4)</b> 1797:19;1799:13;1881:20;1882:5 <b>accumulate (24)</b> 1639:25;1696:1;1697:19;1698:2;1700:1;1733:8;1735:3;1774:8;1805:18;1806:16;1807:1;1809:5;1815:3,7,12,15;1828:19;1831:13;1846:1,21;1847:11,14;1861:2;1896:22 <b>accumulated (23)</b> 1639:9;1685:22;1686:7;1687:15;1690:21;1694:10;1699:18;1711:4;1735:4,24;1743:17;1746:16;1810:17;1815:18;1828:17;1846:3,20;1847:2;1848:13;1898:9;1914:7;1921:18;1922:22 <b>accumulates (1)</b> 1695:20 <b>accumulating (4)</b> 1645:12;1738:17;1770:6;1805:1 <b>accumulation (6)</b> 1679:10;1746:19;1805:4,8;1809:4;1811:4 <b>accurate (2)</b> 1857:18;1898:1 <b>accurately (5)</b> 1707:20;1719:18;1731:20;1742:5;1837:23 <b>acquire (1)</b> 1883:3 <b>acquired (1)</b> 1813:25 <b>acre (1)</b>	<b>ad (1)</b> 1742:19 <b>add (11)</b> 1667:20;1668:6;1732:21;1768:16;1769:19;1772:6;1775:4;1812:7;1813:16;1849:6;1919:4 <b>added (2)</b> 1667:11;1885:17 <b>adding (1)</b> 1668:1 <b>addition (2)</b> 1795:14;1900:24 <b>additional (16)</b> 1658:17;1668:1;1753:1;1766:11;1775:17;1776:24;1777:2;1783:1;1823:22;1831:22;1833:4;1835:24;1861:1,16,25;1908:20 <b>address (5)</b> 1662:21;1692:2;1781:8;1868:10;1930:17 <b>addressed (2)</b> 1858:8;1866:6 <b>addressees (1)</b> 1871:25 <b>addresses (1)</b> 1861:6 <b>addressing (2)</b> 1758:4;1822:4 <b>adequate (3)</b> 1843:1;1863:22;1900:17 <b>adjacent (1)</b> 1896:5 <b>Adjourned (2)</b> 1935:4,6 <b>adjudicated (1)</b> 1899:12 <b>adjustments (1)</b>		
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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage v*

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*Formal Hearing*  
*Vol. VIII*  
*March 3, 2020*

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STATE OF KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the City )  
of Wichita's Phase II ) Case No.  
Aquifer Storage and ) 18 WATER 14014  
Recovery Project in Harvey )  
and Sedgwick Counties, )  
Kansas, )  
Pursuant to K.S.A. 82a-1901  
and K.A.R. 5-14-3a

FORMAL HEARING  
VOLUME VIII

This matter came on for Formal Hearing  
before Constance C. Owen, Presiding Officer, at  
the First Mennonite Church, 427 West Fourth,  
Halstead, Harvey County, Kansas, commencing at  
8:32 a.m., on the 3rd day of March, 2020.

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A P P E A R A N C E S

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Intervenors appear by their attorney,  
Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
Kansas 67056.

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LANE LETOURNEAU

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RE CROSS EXAMINATION BY MS. WENDLING 1983

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RE CROSS EXAMINATION BY MR. MCLEOD 1990

TIM BOESE

DIRECT EXAMINATION BY MR. STUCKY 2013

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1	GMD2 EXHIBIT 59	1	<b>PRESIDING OFFICER:</b> We're now back
2	OFFERED 2223	2	on the record, it's 8:30 in the morning on
3	ADMITTED 2223	3	March 3rd, 2020, and we are continuing the
4		4	administrative hearing for the City of
5	GMD2 EXHIBIT 61	5	Wichita's proposal to modify their Aquifer
6	OFFERED 2052	6	Storage and Recovery Project Phase II.
7	ADMITTED 2052	7	And someone brought to my attention that
8		8	there may be weather sirens today. I don't
9	GMD2 EXHIBIT 62	9	intend to duck and cover, so respond as you
10	OFFERED 2054	10	wish, but I think it's probably just an
11	ADMITTED 2056	11	ordinary drill, I don't think we need to
12		12	worry about it, but I wouldn't want anybody
13	GMD2 EXHIBIT 63	13	to be disrupted.
14	OFFERED 2059	14	<b>UNIDENTIFIED:</b> Connie, cell phones
15	ADMITTED 2059	15	may go off too.
16		16	<b>PRESIDING OFFICER:</b> Okay. Cell
17	GMD2 EXHIBIT 71	17	phones may end up going off. Any other
18	OFFERED 2087	18	preliminary things before we get back to
19	ADMITTED 2087	19	where we left off yesterday?
20		20	Okay. Hearing none, as we closed
21	GMD2 EXHIBIT 73	21	yesterday, there were objections from DWR
22	OFFERED 2135	22	as to questioning by the GMD of Lane
23	ADMITTED 2136	23	Letourneau, who is still on the witness
24		24	stand, and I indicated that I would resolve
25		25	those first thing this morning.

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1 And as I understand it, Mr. Oleen, your  
2 objections were basically in line of  
3 limiting legal opinion testimony from the  
4 witness, is that a good summary?  
5 **MR. OLEEN:** Yes, it was my  
6 understanding that I could ask -- I believe  
7 Mr. Stucky had objected on redirect when I  
8 asked Mr. Letourneau about the regulatory  
9 definition of recharge credit, I asked him  
10 a specific question pertaining to a  
11 specific verb clause. Mr. Stucky objected  
12 to me doing that because there were a  
13 previous set of objections related to a  
14 line of questioning regarding this  
15 regulation.  
16 It was my understanding that if I asked  
17 him what I believed was truly only one or  
18 two questions about the particular verb  
19 clause that that would open the door for  
20 Mr. Stucky to maybe also ask questions  
21 about that verb clause but not necessarily  
22 ask a bunch of additional questions beyond  
23 that. And I believe Mr. Stucky, he had a  
24 differing understanding of what you had  
25 allowed in that regard.

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1 **PRESIDING OFFICER:** Okay. And your  
2 understanding, Mr. Stucky, was?  
3 **MR. STUCKY:** My understanding, Your  
4 Honor, was that I would be able to ask  
5 questions about any phrase in that  
6 definition and construe that entire  
7 definition with this witness, that was my  
8 understanding. And my position yesterday  
9 was based on the fact that his deposition,  
10 which has been admitted as an expert  
11 report, is replete with references and  
12 discussion of statutes. And, indeed, we're  
13 also introducing a letter from the chief  
14 engineer that opines on the legal aspects  
15 of this proposal, and the witness has  
16 adopted those legal opinions. And so  
17 either, A, that -- that should not be  
18 admitted as just rank hearsay, or -- on one  
19 hand, or on the other hand, if it is  
20 admitted, then it's the opinion -- it's the  
21 witness's opinion on these legal aspects  
22 and I should be free to engage in cross.  
23 That's the position in short.  
24 **PRESIDING OFFICER:** Okay. So you're  
25 wishing to -- to question the witness on, I

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1 think it was 5-1-1(mmm), beyond the scope  
2 of what Mr. Oleen is comfortable with?  
3 **MR. STUCKY:** That is right.  
4 **PRESIDING OFFICER:** Okay. The issue  
5 of legal opinion testimony is one that has  
6 been covered before in this hearing and in  
7 these proceedings, so last night I took the  
8 opportunity to try to carefully review what  
9 had been argued regarding other witnesses,  
10 but the topic of legal opinion testimony  
11 with our experts in this case, and to  
12 review what I had previously decided and  
13 why, to be thorough and consistent.  
14 And the context of this hearing is one  
15 that many times over we've mentioned is  
16 rather unusual and that it is an  
17 administrative hearing, evidentiary rules  
18 are relaxed. And even in civil trials, the  
19 Court, which would be my role, has broad  
20 discretion regarding admissibility of  
21 evidence, so in an administrative setting,  
22 it would be at least -- at least that broad  
23 and flexible.  
24 And I reviewed my order on prehearing  
25 motions from July of 2019 and some other

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1 aspects of the record, and in light of the  
2 fact that this is an administrative hearing  
3 and Mr. Letourneau's job necessarily  
4 requires the application of statutes and  
5 regulations as part of his duties, it is --  
6 I find it unnecessary and detrimental to  
7 prevent him from making any comments about  
8 how the statutes and regulations apply,  
9 that's part of his area of expertise,  
10 that's part of why he is here. And,  
11 indeed, in his prehearing brief, which I  
12 reviewed, he does make legal conclusions  
13 and adopt those of the chief engineer, and  
14 as Mr. Stucky said, that also took place in  
15 Mr. Letourneau's deposition.  
16 And also in reviewing the grounds for my  
17 order on prehearing motions, when I ruled  
18 on this very issue regarding other  
19 witnesses, the concern about legal opinion  
20 testimony from experts is that there would  
21 be confusion of a jury or a usurpation of  
22 the judicial role in determining legal  
23 conclusions. There's no jury and the  
24 testimony of someone in Mr. Letourneau's  
25 position as to how he applies regs and

1 statutes in the course of his job is not a  
2 usurpation of my authority, and any opinion  
3 he may have on how he applies those  
4 statutes and regs is not determinative. I  
5 am not bound to agree that what he says is  
6 true and accurate just because he says it's  
7 true and accurate. Likewise, I'm not bound  
8 to disagree.

9 The determination of laws and statutes  
10 and what they mean is the role of the  
11 Court, and so I am at liberty to make those  
12 decisions regardless of what witnesses  
13 testify, and any Court reviewing what I do  
14 is likewise free to make any decisions  
15 about what those statutes and laws  
16 actually -- or statutes and regs actually  
17 do mean.

18 So having said all that, I believe  
19 Mr. Stucky may go forward with further  
20 questions about K.A.R. 5-1-1(mmm) for all  
21 the reasons that I explained but primarily  
22 because Mr. Letourneau is speaking also in  
23 terms of what his job is, what he has done  
24 in the course of his job, and applying  
25 these regs and these statutes is part of

1 we'd look to find that aspect of this larger  
2 definition?

3 **A. Yes, that's correct.**

4 Q. So what is the basin storage area?

5 **A. Basin storage area means the portion of the  
6 aquifer used for aquifer storage that has  
7 defined horizontal boundaries and is delimited  
8 by a maximum index level and a minimum index  
9 level.**

10 Q. Okay. So basin storage area -- so to understand  
11 how basin storage area applies in this  
12 definition of recharge credit, I suppose we need  
13 to know what aquifer storage means; is that  
14 right? Is that defined by regulation as well?

15 If we were to look to K.A.R. 5-1-1(e) --

16 **A. Correct.**

17 Q. -- we would understand what aquifer storage  
18 means; is that right?

19 **A. That's correct.**

20 Q. And what is aquifer storage, then, in --

21 **A. Aquifer storage -- I'm sorry, I didn't let you  
22 stop. Aquifer storage means the act of storing  
23 water in an aquifer by artificial recharge for  
24 subsequent diversion and beneficial use.**

25 Q. Okay. So aquifer storage tells us it's the act

1 what his job is. That is his domain and  
2 his area of expertise.

3 So having said that, I'm going to  
4 overrule the objection, and, Mr. Stucky,  
5 you can proceed to ask about this  
6 particular regulation.

7 **MR. STUCKY:** Thank you, Your Honor.

9 **RECROSS EXAMINATION (Cont.)**

10 **BY MR. STUCKY:**

11 Q. Mr. Letourneau, if you could turn in the exhibit  
12 notebook, which is Volume Number II and it was  
13 Exhibit 22, if you could have that regulation in  
14 front of you.

15 **A. Even open from yesterday.**

16 Q. All right. So yesterday Mr. Oleen asked you  
17 some questions about the definition of a  
18 recharge credit, and I would like to understand  
19 this definition in a little greater detail as  
20 you would apply this definition in your job.

21 And so it says, recharge credit means the  
22 quantity of water that is stored in the basin  
23 storage area. What is a basin storage area, is  
24 that defined by statute? Or regulation, rather?  
25 Would that be K.A.R. 5-1-1(k), is that where

1 of storing water in an art -- aquifer by  
2 artificial recharge, is that what it says?

3 **A. Correct.**

4 Q. So in other words, to have aquifer storage,  
5 there has to be the act of putting water in the  
6 aquifer, is that what this is saying?

7 **A. No.**

8 Q. Well, tell me what you think this definition of  
9 aquifer storage means if you were applying it in  
10 your job.

11 **A. Okay. It means the act of storing water in an  
12 aquifer by artificial recharge for subsequent  
13 diversion and beneficial use, and a recharge  
14 credit can be artificial recharge.**

15 Q. So you think that this definition implies  
16 putting water in the aquifer for storage?

17 **A. Not necessarily. It does speak, though, Dave,  
18 to artificial recharge. Aquifer storage is  
19 artificial recharge.**

20 Q. If we were to go back, then, to the definition  
21 of basin storage area, it has a reference to  
22 both maximum index level and minimum index  
23 level; is that right?

24 **A. That's correct.**

25 Q. And maximum index level and minimum index level

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1 are both also defined by statute, so --  
 2 **A. That's correct.**  
 3 Q. -- it further gives us context to this  
 4 definition of recharge credit; is that right?  
 5 **A. That's correct.**  
 6 Q. And, in fact, if you were to turn in this  
 7 regulation to (ss) and (uu), we would find  
 8 definitions of maximum index level and minimum  
 9 index level?  
 10 **A. That's correct.**  
 11 Q. Previously, you defined minimum index level, and  
 12 we discussed that that was changed by virtue of  
 13 a regulation change, that definition, but  
 14 there's also a definition of maximum index  
 15 level, what is that?  
 16 **A. The maximum index level means the maximum**  
 17 **elevation for storage within a basin storage**  
 18 **area or, if the basin storage area is**  
 19 **subdivided, a smaller subdivided area.**  
 20 Q. So when we look at this maximum versus minimum  
 21 index level, we're talking about essentially a  
 22 bottom and essentially a top, is that what we're  
 23 talking in this basin storage area?  
 24 **A. Yes.**  
 25 Q. So let's turn back, then, to this concept of a

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1 basin storage area. It says, basin storage area  
 2 means the portion of the aquifer used for  
 3 aquifer storage, we just talked about what that  
 4 means, that has defined horizontal boundaries  
 5 and is delimited by maximum index levels and  
 6 minimum index levels. So what is your concept  
 7 of a basin storage area as it relates to aquifer  
 8 storage?  
 9 **A. It's a box in the aquifer.**  
 10 Q. It's a -- is it a place where water can be  
 11 stored?  
 12 **A. Yes.**  
 13 Q. Now let's turn back to -- well, let's now turn  
 14 to -- back to that original definition that  
 15 we're discussing in (mmm). So we -- what we  
 16 have here, it says, means the quantity of water  
 17 that is stored in the basin storage area, and we  
 18 talked about a basin storage area, and then it  
 19 says, and that is available for subsequent  
 20 appropriation for beneficial use by the operator  
 21 of an aquifer storage and recovery system.  
 22 Aquifer storage and recovery system is also  
 23 defined by regulation, is it not?  
 24 **A. Correct.**  
 25 Q. Is that found in subsection (f) of K.A.R. 5-1-1?

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1 **A. Yes.**  
 2 Q. Aquifer storage and recovery system means the  
 3 physical infrastructure that meets the following  
 4 conditions, right, and number 1, it says, is  
 5 constructed and operated for artificial  
 6 recharge, storage, and recovery of source water.  
 7 And then there's a second requirement, it says,  
 8 and consists of apparatus for diversion,  
 9 treatment, recharge, storage, extraction, and  
 10 distribution. In aquifer storage and recovery  
 11 systems, to better understand what that means,  
 12 it references the concept of source water, does  
 13 it not?  
 14 **A. Yes.**  
 15 Q. And so, again, to really understand what we're  
 16 talking about with respect to a recharge credit,  
 17 because a recharge credit is defined in the  
 18 context of an aquifer storage and recovery  
 19 system, we'd have to know what source water is;  
 20 is that right?  
 21 **A. That's correct.**  
 22 Q. And source water is also defined by statute; is  
 23 that -- is that right?  
 24 **A. That's correct.**  
 25 Q. So let's turn now to the definition of source

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1 water. And I think that's found in (yyy). It  
 2 says, source water means water used for  
 3 artificial recharge that meets the following  
 4 conditions, is available for appropriation for  
 5 beneficial use, is above base flow stage in the  
 6 stream, is not needed to satisfy minimum  
 7 desirable streamflow requirements, and will not  
 8 degrade the ambient groundwater quality in the  
 9 basin storage area. So as you look at this  
 10 definition of source water, it talks about  
 11 basically getting water above a base flow in a  
 12 stream in number 2; is that right?  
 13 **A. Correct.**  
 14 Q. So that would be analogous to getting water from  
 15 the Little Arkansas River when it's flooding,  
 16 would it not?  
 17 **A. Yes, correct.**  
 18 Q. And number 3, it says, is not needed to satisfy  
 19 minimum desirable streamflow, so once again, if  
 20 the river is really low, we're not going to take  
 21 water out to either send it to the City or put  
 22 it in an aquifer, correct?  
 23 **A. Yeah, that's correct, the trigger levels are**  
 24 **much -- the trigger levels to operate this**  
 25 **aquifer storage and recovery are much higher**

1 **than MDS.**

2 Q. And then the final requirement -- and the first  
3 requirement was a given, that it's available for  
4 appropriation for beneficial use, but the final  
5 requirement, it says, with respect to source  
6 water, it will not degrade the ambient  
7 groundwater quality in the basin storage area.  
8 So here we're talking about this concept of  
9 source water, and it's talking about source  
10 water and it's referencing pulling out the  
11 source water when it's above this minimum --  
12 this minimum desirable streamflow, and basically  
13 when this water is flooding, it's talking about  
14 the source water --

15 **MR. MCLEOD:** Is there a question  
16 somewhere here?

17 **MR. STUCKY:** There will be a  
18 question.

19 **BY MR. STUCKY:**

20 Q. And so that's what we discussed so far; is that  
21 right?

22 **A. Correct.**

23 Q. But this last requirement contemplates this idea  
24 that we're going to use this source water and  
25 put it in the basin storage area, is that right,

1 recovery system.

2 **A. Okay.**

3 Q. So as we look at that first part of that  
4 concept, it says, it is constructed and operated  
5 for artificial recharge storage and recovery of  
6 source water. So as source water is used in  
7 this statement and when we're talking about a  
8 recovery of source water, we're talking about  
9 getting the source water back, and you told me  
10 that the source water would be captured when  
11 we're above base flow of a stream and  
12 essentially it's flooding, if you will, for an  
13 easy conceptualization of this. But then we're  
14 talking about, it says artificial recharge  
15 storage, and then it says recovery of this  
16 source water?

17 **A. Correct.**

18 Q. In the context of this regulation with respect  
19 to basin storage area and recovery system, is it  
20 contemplating that that source water would be  
21 put in the aquifer so it could be recovered?

22 **A. Some type of recharge credit would be put in the  
23 aquifer. The source water becomes a recharge  
24 credit to be put in the aquifer.**

25 Q. So then if we turn back to this definition found

1 because it refers to whether or not we're going  
2 to degrade the ambient groundwater quality in  
3 the basin storage area; is that right?

4 **MR. OLEEN:** I object, I think he's  
5 misstating the particular regulation.

6 **PRESIDING OFFICER:** I'm interested  
7 in what Mr. Letourneau thinks the  
8 regulation says.

9 **BY MR. STUCKY:**

10 Q. Mr. Letourneau, I'll rephrase the question, this  
11 is going to take a little more time, I'll  
12 rephrase it. Number -- number 4, which I read  
13 word for word says, the final requirement is  
14 that it will not degrade the ambient groundwater  
15 quality in the basin storage area. So my  
16 question is if there's a concern here about  
17 degrading water quality in the groundwater of a  
18 basin storage area, doesn't that contemplate  
19 putting this source water that we got from this  
20 overflow into an aquifer?

21 **A. Yes, or not take it out. Either not take it out  
22 or whatever you put in has to be as good or  
23 better.**

24 Q. So now let's turn back to that definition that  
25 we found with respect to aquifer storage and

1 in (mmm) under recharge credit?

2 **A. Okay.**

3 Q. It says, recharge credit means the quantity of  
4 water that is stored in the basin storage area,  
5 and we talked about what a basin storage area is  
6 and what it means to store source water in the  
7 basin storage area, did we not?

8 **A. Correct.**

9 Q. And it says, then, and that is available for  
10 subsequent appropriation for beneficial use. So  
11 I guess my question is if there's some sort of  
12 act that occurs of storing water in a basin  
13 storage area, whatever that act is, and of  
14 course we may disagree on what that act  
15 constitutes, what is meant by this concept of  
16 subsequent appropriation as outlined in this  
17 regulation?

18 **A. Well, my thought on that is it took an  
19 appropriation to put the water in -- it took an  
20 appropriation to put the recharge credit into  
21 the basin storage area, then it's a subsequent  
22 appropriation to pump it back out and use it for  
23 municipal use.**

24 Q. But you just answered my question in the context  
25 of putting water in, is that how you answered my

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1 question?  
 2 **A. A recharge credit in. We put a recharge**  
 3 **credit -- a recharge credit is stored in the**  
 4 **basin storage area, it takes an appropriation to**  
 5 **put a recharge credit into the basin storage**  
 6 **area and then a subsequent appropriation to pull**  
 7 **it out and put it to beneficial use. That's how**  
 8 **I -- that's how I see it.**  
 9 Q. Okay. And just to clarify, and I'm trying to  
 10 understand the Division of Water Resources'  
 11 position in this regard, just to clarify, this  
 12 dovetails into your discussion on perfection  
 13 that the put into the aquifer, if you will, is  
 14 created at that moment the water is sent  
 15 directly to the City, is that right, that's when  
 16 that recharge credit is created?  
 17 **A. The -- well, okay, the recharge credit is --**  
 18 **yes, I mean, if -- if the City --**  
 19 **MR. OLEEN:** I'm sorry, I'm going to  
 20 object just because are you talking about  
 21 recharge credits under the current Phase II  
 22 system or the contemplated AMCs?  
 23 **MR. STUCKY:** The contemplated AMCs,  
 24 I'll clarify.  
 25 **A. But then also perfection is not part of this**

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1 **proposal. I mean, I'll answer the question, but**  
 2 **this proposal is about AMCs and about lowering**  
 3 **the bottom. It's not about perfection. But**  
 4 **I'll --**  
 5 **BY MR. STUCKY:**  
 6 Q. I'll withdraw that question.  
 7 **A. Okay.**  
 8 Q. I'll make it easier for you and withdraw that  
 9 question. Let me just ask this: As it relates  
 10 to these definitions, when it -- when it talks  
 11 about what's stored in the aquifer, are we  
 12 talking about storing a recharge credit in the  
 13 aquifer, or are we talking about storing source  
 14 water in the aquifer, what is being  
 15 contemplated?  
 16 **A. Well, source water becomes a recharge credit,**  
 17 **and it's the recharge credit, then, that's**  
 18 **stored in the aquifer. Well, it's stored in the**  
 19 **basin storage area, I'm sorry, that -- so source**  
 20 **water becomes a recharge credit, and a recharge**  
 21 **credit is stored in the basin storage area.**  
 22 Q. So you're telling me that as these definitions  
 23 exist -- well, let me back up here. Let's go  
 24 back to this definition of recharge credit found  
 25 on page 6 in (mmm). It says, recharge credit

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1 means the quantity of water that is stored in  
 2 the basin storage area, so are you telling me  
 3 that instead of saying water in this definition,  
 4 it should read recharge credit means the  
 5 quantity of recharge credits that are stored in  
 6 the basin storage area, that we should read the  
 7 word water out of that definition?  
 8 **A. No, because water is -- water is part of that**  
 9 **definition. So recharge credit means the**  
 10 **quantity of water that's stored in the basin**  
 11 **storage area, but -- so, yeah, I mean, we**  
 12 **could -- we can say that source water becomes a**  
 13 **recharge credit, that is water, but then the**  
 14 **recharge credit is stored in the basin storage**  
 15 **area. It is -- it is water, but it's a -- but**  
 16 **the accounting is what calls it a recharge**  
 17 **credit.**  
 18 Q. And my question is, this is obvious with respect  
 19 to ASR Phase II, the recharge credit that's  
 20 stored in the aquifer that's a type of water,  
 21 that's, indeed, source water with ASR recharge  
 22 credit, right?  
 23 **A. That's correct.**  
 24 Q. So let me just ask this: With respect to an  
 25 aquifer maintenance credit, then, the water that

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1 is stored in the aquifer, is that -- is that  
 2 source water?  
 3 **A. That -- yes, we would consider that source**  
 4 **water. Now, water is not physically put into**  
 5 **the aquifer, but it starts out as source water,**  
 6 **then is treated, taken to town, but then it**  
 7 **becomes an AMC because space is not in the**  
 8 **aquifer.**  
 9 Q. I'm still confused, Mr. Letourneau. You told me  
 10 that with an AMC the source water is sent  
 11 directly to the City for municipal use. Right  
 12 after it's taken out of the Little Arkansas  
 13 River, it's treated, it's sent directly to the  
 14 City for municipal use, so how does that source  
 15 water, when this aquifer maintenance credit is  
 16 accumulated, how does it become source water in  
 17 the aquifer if it's been sent to the City  
 18 already?  
 19 **A. By the accounting, by -- by the annual**  
 20 **accounting report.**  
 21 Q. So, basically, just so I'm clear and I can leave  
 22 this point alone, but because the accounting  
 23 report says that it's become source water,  
 24 that's what you're relying on to believe that  
 25 this has become source water?

1 **A. Well, I mean, it's all part of the operation,**  
2 **it's got to be source water, it's got to be high**  
3 **flow from the Little Ark that's pulled out, it's**  
4 **treated at the infra -- at the ASR**  
5 **infrastructure. There's a determination made if**  
6 **there's space in the aquifer; if there is, City**  
7 **will put it in, that's physical recharge credit,**  
8 **that's the same as Phase II right now. Now,**  
9 **though, source water comes out, it's treated at**  
10 **the facility, if there's not space in the**  
11 **aquifer, it goes to town but it becomes an AMC.**  
12 Q. But I thought you told me yesterday that no  
13 source water was actually put in the aquifer is  
14 what I thought you told me yesterday?  
15 **A. Water is not put in the aquifer but source --**  
16 **you got to look at the definition of source**  
17 **water.**  
18 Q. You said source water was basically similar to,  
19 analogous to this floodwater from the Little  
20 Arkansas River that can be taken out and  
21 treated, but I thought you told me in the  
22 context of an aquifer maintenance credit that  
23 source water is sent directly to the City for  
24 municipal use, I thought is what you told me?  
25 **A. And that -- in that case. But also the**

1 that?  
2 **A. Yes.**  
3 Q. Yesterday you were asked a question to  
4 distinguish between observation wells and  
5 production wells. Do you recall those  
6 questions?  
7 **A. Yes.**  
8 Q. And the question was asked if production wells  
9 can provide beneficial data for understanding  
10 the lithologic data in a well; is that right?  
11 **A. That's correct.**  
12 Q. Let me ask this: Are production wells usually  
13 designed to be drilled in a place that generates  
14 the most water?  
15 **A. Absolutely.**  
16 Q. So in the sense that production wells may be  
17 drilled in a place that generates the most  
18 water, could they also have the tendency to  
19 overestimate the amount of water in the aquifer?  
20 **A. That I don't know.**  
21 Q. Well, let me just ask this: Mr. Letourneau,  
22 your job for the Division of Water Resources is  
23 to not only address issues here in the Equus  
24 Beds Aquifer, but you're also -- you mentioned  
25 the Ogallala Aquifer yesterday, and you're very

1 **accounting, though, because there's not room in**  
2 **the aquifer, that source water is taken to town**  
3 **but we also develop a aquifer maintenance**  
4 **credit.**  
5 Q. And my question is, then, when we create this  
6 aquifer maintenance credit, would you at least  
7 agree that this act of creating this aquifer  
8 maintenance credit doesn't actually put source  
9 water into the basin storage area?  
10 **A. Yes, I can agree with that.**  
11 Q. All right. We'll move on, then, and let's --  
12 yesterday you were asked a question about -- you  
13 made a comment, I probably just didn't hear you  
14 correctly, I think you said that if the Division  
15 of Water Resources doesn't see impairment in the  
16 City's proposal, we will approve it, and I  
17 thought you said something to that effect. But  
18 would you agree with me that impairment is one  
19 of numerous factors that should be considered  
20 as -- as we're evaluating the City's proposal?  
21 **A. Oh, absolutely.**  
22 Q. And, in fact, I don't need to approach you with  
23 the order of the hearing officer in this case  
24 that indicates there's a multitude of factors  
25 that should be considered, you would agree with

1 familiar with issues out in western Kansas as  
2 well; is that right?  
3 **A. Well, the entire state, yes.**  
4 Q. Are you aware of a situation in western Kansas  
5 where there was an analysis of well logs and  
6 they were only looking at production wells for  
7 their analysis and it created skewed results as  
8 far as the actual health of the Ogallala  
9 Aquifer?  
10 **A. Well, I -- no, you'll have to be more specific,**  
11 **there's hundreds of cases.**  
12 Q. Well, I'm asking are you aware of a situation  
13 where -- where there's been some analysis  
14 performed on production wells in western Kansas  
15 and it created this tendency to overestimate the  
16 actual health of that Ogallala Aquifer or the  
17 actual amount of water in it?  
18 **A. No.**  
19 Q. Are you aware of such a -- such studies?  
20 **A. Not without additional details. And I'm not**  
21 **trying to be difficult, I just need more**  
22 **details, yeah.**  
23 Q. Okay. Are you aware that both KGS and the GMDs  
24 have been advocating that test well drill logs  
25 be required to be submitted to KDHE so that a



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1 more complete aquifer record is established?  
 2 **A. Yeah, absolutely. And, actually, I've told the**  
 3 **health and environment -- I mean, I'm even part**  
 4 **of that group also, that we want all test logs,**  
 5 **everything, reported to the KGS.**  
 6 Q. Would you also agree with me that these test  
 7 well logs that we looked at last time we were  
 8 here, those are monitoring wells that were put  
 9 into place by the City; is that right?  
 10 **A. Yes.**  
 11 Q. And would you also agree with me that the City  
 12 has to submit water quality data based on these  
 13 actual test wells; is that right?  
 14 **A. That's correct.**  
 15 Q. So in other words, as the City generates their  
 16 reports to determine the health of the aquifer  
 17 and the impacts of their recharge project on  
 18 water quality, they're at least, in part,  
 19 relying on the results that they generate from  
 20 these test wells; is that right?  
 21 **A. Yes, absolutely.**  
 22 Q. So at least in that sense, the City of Wichita  
 23 believes that those test wells and the results  
 24 they produce are accurate; is that right?  
 25 **A. That's right.**

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1 Q. Yesterday we were asked a question -- you were  
 2 asked some questions once again about whether  
 3 the Groundwater Management District  
 4 strategically picked a few test wells, whether  
 5 or not the Groundwater Management District  
 6 strategically picked just a handful of these  
 7 test wells that were the most -- that indicated  
 8 the most harmful effects in the aquifer. Do you  
 9 recall that question?  
 10 **A. I don't -- I don't remember that.**  
 11 Q. Well, do you recall Mr. McLeod asking you a  
 12 question about one of these test wells that was  
 13 in the northwest portion of the aquifer --  
 14 **A. Yes.**  
 15 Q. -- and whether that could skew the results?  
 16 **A. Yes, I do recall that.**  
 17 Q. And do you also recall in our -- our previous  
 18 exercise here where Mr. Oleen stood up on the  
 19 record and said that the GMD had strategically  
 20 cherry-picked a few of these test well logs, do  
 21 you recall that?  
 22 **A. No, but -- no, but I'll -- I can agree with it.**  
 23 **I don't remember that.**  
 24 Q. All right. Well, Mr. Letourneau, I would like  
 25 to talk with you about index well 14C.

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1 **MR. STUCKY:** May I approach the  
 2 witness?  
 3 **PRESIDING OFFICER:** Yes.  
 4 **BY MR. STUCKY:**  
 5 Q. Mr. Letourneau, I've handed you another well  
 6 drilling log, and would you agree with me that  
 7 for the purposes of this record this is a -- an  
 8 official drilling log for 14 -- index well 14C  
 9 in the aquifer?  
 10 **A. That's correct.**  
 11 **MR. OLEEN:** Mr. Stucky, just point  
 12 of clarification, is this a new log apart  
 13 from the previous GMD Exhibit 80?  
 14 **MR. STUCKY:** Yes, it is.  
 15 **BY MR. STUCKY:**  
 16 Q. And if we were to turn in the City's proposal  
 17 document, just to orient everybody to where  
 18 index well 14C is, I think it's figure -- if you  
 19 could turn with me to figure 10 just so we can  
 20 orient where we're talking. Figure 10 of the  
 21 City's proposal. Were you able to turn to  
 22 figure 10?  
 23 **A. Oh, yes, I'm sorry.**  
 24 Q. And if we look at where index well 14 is, that's  
 25 right in the -- right in the basin storage area;

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1 is that right?  
 2 **A. Yes, on the eastern -- on the, I'm sorry, on the**  
 3 **western edge.**  
 4 Q. And, in fact, it's fully in the basin storage  
 5 area; is that right?  
 6 **A. Yes.**  
 7 Q. So if we look at this well log for index well  
 8 14C, as we look at the clay layers in this well  
 9 log, would you agree with me that there's a  
 10 significant amount of clay?  
 11 **A. Yes.**  
 12 Q. And I don't want to waste anyone's time on the  
 13 record, but if I were to tell you that there is  
 14 97 feet of clay and you were to take out a  
 15 calculator and add it up, would you have reason  
 16 to disagree with that number?  
 17 **A. No.**  
 18 Q. So in other words, if -- and, in fact, in this  
 19 case, they only set the casing down to 150 feet,  
 20 is that right, because they were hitting clay?  
 21 **A. That's correct.**  
 22 Q. Okay. So even though bedrock, or shale, was  
 23 down much further, in fact, it looks like at  
 24 240 feet, it looks like here is where they hit  
 25 shale, they -- they set their -- they set it

1 only down almost 100 feet shy of that because of  
2 all the clay layers; is that right?  
3 **A. Probably. I mean ...**  
4 Q. So then again -- so, essentially, and we can go  
5 through in great detail of this exercise as far  
6 as practical saturated thickness as it relates  
7 to figure 10 and practical saturated thickness  
8 as it relates to figure 11, but if we use those  
9 numbers and I were to tell you that as it  
10 relates to figure 10, practical saturated  
11 thickness, if the clay layer is only 97 -- I'm  
12 sorry, if the clay layer is 97 feet, if I were  
13 to tell you as it relates to figure 10 the  
14 practical saturated thickness would only be  
15 104 feet, would you have reason to disagree with  
16 my math?  
17 **A. No.**  
18 Q. And, in fact, in the City's proposal, they say  
19 that the practical saturated thickness in index  
20 well 14 is 205 feet; is that right?  
21 **A. Well, average remaining saturated --**  
22 **MR. OLEEN:** Objection, objection.  
23 **BY MR. STUCKY:**  
24 Q. I'm sorry, yeah, I did misspeak. But actual  
25 practical saturated thickness is 205 feet, I'm

1 **A. That's correct.**  
2 Q. So once again, the practical saturated thickness  
3 that you gathered by looking at this well log is  
4 actually less -- is actually approximately half;  
5 is that right?  
6 **A. That's correct.**  
7 **MR. STUCKY:** May I approach the  
8 witness?  
9 **PRESIDING OFFICER:** Yes.  
10 **BY MR. STUCKY:**  
11 Q. I'm going to approach you here in a minute with  
12 a well log for index well 8. First of all,  
13 where is index well 8? Is it on the western  
14 half, is that right, of the aquifer?  
15 **A. That's correct.**  
16 **PRESIDING OFFICER:** Thank you.  
17 **BY MR. STUCKY:**  
18 Q. With respect to index well 8, do you have  
19 that -- another official monitoring well in the  
20 City and the well log, corresponding well log  
21 before you; is that right?  
22 **A. That's correct.**  
23 Q. Just to speed this up, this exercise up a little  
24 bit, if I were to tell you that on -- with  
25 respect to this exhibit that now is before you

1 sorry?  
2 **A. Correct.**  
3 Q. But, in fact, as we looked at that index  
4 monitoring well, the practical saturated  
5 thickness is actually about half of what's  
6 reported in that index cell, is that right, for  
7 that monitoring well?  
8 **A. For the monitoring well.**  
9 Q. And would you also agree with me as we look at  
10 where this monitoring well is located, it's  
11 essentially located relatively close to the  
12 middle of index well 14; is that right? Or  
13 index cell 14?  
14 **A. Yeah. Yes.**  
15 Q. And if we were to turn to figure 11 and I were  
16 to tell you once again that if we were to  
17 subtract out the 97 feet of clay and we get to a  
18 practical saturated thickness there, it would  
19 only be 94 feet, would you have reason to  
20 disagree with my number as it relates to figure  
21 11?  
22 **A. No.**  
23 Q. Okay. But in figure 11, we see the actual  
24 saturated thickness reported there is 194 feet;  
25 is that right?

1 there's 54 feet of clay in this lithologic data,  
2 would you have reason to disagree with that?  
3 **A. No.**  
4 Q. And if I were to tell you as it relates to  
5 figure 10, based on the calculations you did for  
6 me earlier, the practical saturated thickness  
7 would be only 135 feet at index well 8, would  
8 you have reason to disagree with that?  
9 **A. No.**  
10 Q. But, in fact, what's reported here is 205 feet  
11 of actual saturated thickness; is that right?  
12 **A. Correct.**  
13 Q. So once again, when we look at the difference  
14 between this practical saturated thickness and  
15 the actual saturated thickness, it looks like  
16 we're talking about a difference of, what,  
17 70 feet or something of that nature?  
18 **A. That's correct.**  
19 Q. And also the same exercise with respect to  
20 figure 11, if I were to tell you that as it  
21 relates to figure 11 the practical saturated  
22 thickness is 125 feet versus what is reported as  
23 the actual saturated thickness of 196 feet, you  
24 would also agree there is a disparity there; is  
25 that right?

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1 **A. That's correct.**  
 2 Q. And as it relates to index well 8, this  
 3 monitoring well is also more or less in the  
 4 middle of that index cell; is that true?  
 5 **A. That's correct.**  
 6 Q. And certainly my esteemed colleague has a stack  
 7 of well logs and we could spend time in this  
 8 hearing going through them and I could tell you  
 9 that index well 26C has 117 feet of clay, index  
 10 well 31 has 117 feet of clay, and I could go on  
 11 down the list through these lithologic logs, but  
 12 without having to go through all this data to  
 13 overcome this objection that somehow we're  
 14 picking these -- these official monitoring wells  
 15 of the City in a spot that doesn't match up with  
 16 the City's data, would you at least agree with  
 17 me that we've shown you enough well logs that  
 18 gives you reason to believe that more data and  
 19 more research is needed in this regard?  
 20 **A. I'll ask the modelers when I can, I mean ...**  
 21 Q. But if you were to make an official  
 22 recommendation as it relates between the  
 23 disparity of the practical saturated thickness  
 24 and the actual saturated thickness shown in the  
 25 City's -- in the City's report, is it your

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1 recommendation that these well logs, whether  
 2 they be the City's monitoring wells or from  
 3 their actual production wells, would it be your  
 4 recommendation that that data should be looked  
 5 at?  
 6 **A. Well, my recommendation would be -- I'm sure it**  
 7 **has been looked at by the modelers, but I**  
 8 **don't -- but, see, I can't talk to them, and so,**  
 9 **yes, it does raise a question, but I do want to**  
 10 **talk to the modelers.**  
 11 Q. So in other words --  
 12 **A. To answer the question is yes, it raises a**  
 13 **question and I need to talk to the modeler. But**  
 14 **I don't know --**  
 15 Q. I would like to --  
 16 **A. -- I don't know when I can talk to the modelers,**  
 17 **that's what we have to figure out.**  
 18 **MR. STUCKY:** I would just like to  
 19 move to admit those two well logs as the  
 20 District's Exhibit 81 (sic).  
 21 **PRESIDING OFFICER:** So for wells 14C  
 22 and 8 --  
 23 **MR. STUCKY:** That's correct.  
 24 **PRESIDING OFFICER:** -- you'd like  
 25 that to be Exhibit 81? Any objection?

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1 Hearing none, Exhibit 81 will be admitted,  
 2 GMD 81.  
 3 **BY MR. STUCKY:**  
 4 Q. Yesterday you were asked a question about  
 5 whether or not we need -- we need a model to say  
 6 it's a good idea to keep the aquifer full. Do  
 7 you recall that question?  
 8 **A. Yeah.**  
 9 Q. But would you at least agree with me that a  
 10 model is important to determine the effects of  
 11 taking the water back out of the aquifer?  
 12 **A. Yeah, absolutely.**  
 13 Q. Yesterday Mr. McLeod asked you some questions  
 14 about safe yield, and he gave you two  
 15 hypotheticals, one that related to an ASR  
 16 Phase I recharge credit on one hand and an  
 17 aquifer maintenance credit on the other hand, do  
 18 you recall those two hypotheticals?  
 19 **A. Yes.**  
 20 Q. First of all, as it relates to safe yield, let  
 21 me just ask this: He asked you about safe yield  
 22 in the context of water levels; is that right?  
 23 **A. Yes.**  
 24 Q. But would you agree with me that safe yield  
 25 actually goes hand in hand with water available

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1 for appropriation, and it's a calculation that  
 2 looks at the balances between recharge and  
 3 discharge of the aquifer?  
 4 **A. That's correct.**  
 5 Q. Nonetheless, I would like to look at those two  
 6 hypotheticals that Mr. McLeod brought up, and I  
 7 just want to use easy numbers that are easy for  
 8 everyone to understand. So let's assume with  
 9 Mr. McLeod's hypothetical that we're looking at  
 10 a 1-acre area, okay, and let's just assume that  
 11 the water in this 1-acre area is 10 feet above  
 12 bedrock, okay, you follow me?  
 13 **A. (Witness nods head affirmatively.)**  
 14 Q. Now, let's assume that with respect to a  
 15 physical recharge credit, an acre-foot of water  
 16 is injected into the aquifer. What would the  
 17 water level then be in this -- in this 1-acre  
 18 area?  
 19 **A. I don't know.**  
 20 Q. Well, we have to take into account the storage  
 21 coefficient, and it may be anywhere from .15, as  
 22 has been reported for this ASR project, or .2  
 23 but --  
 24 **MR. MCLEOD:** Is Counsel going to let  
 25 the witness testify or is Counsel

1 testifying?  
2 **MR. STUCKY:** I'm asking my question.  
3 **PRESIDING OFFICER:** I think you're  
4 setting up a hypothetical, right?  
5 **MR. STUCKY:** Right, that's right.  
6 **PRESIDING OFFICER:** Okay. So  
7 let's -- please try and set that up.  
8 **BY MR. STUCKY:**  
9 Q. Okay. So we have -- it's 10 feet above bedrock,  
10 let's say we inject an acre-foot of water into  
11 this 1-acre area. If we were to subtract out  
12 any kind of storage coefficients, if we assume  
13 that we can subtract out storage coefficients  
14 for sand and gravel, would you agree with me  
15 that the water level would go up by a foot?  
16 **A. Yes.**  
17 Q. Okay. So at that point, as we've injected in  
18 the water, we're now at 11 feet. Then let's say  
19 down the road that the same amount of recharge  
20 credits that were injected are taken out and  
21 let's say that we don't have to worry about  
22 gradational losses.  
23 **A. Okay.**  
24 Q. Let's say that that same amount is taken out in  
25 the future, what is the water level back to in

1 RE CROSS EXAMINATION  
2 **BY MS. WENDLING:**  
3 Q. Mr. Letourneau, we've talked about managing the  
4 aquifer full, do you recall that?  
5 **A. Absolutely.**  
6 Q. By managing the aquifer full, do you -- are you  
7 referring to the City not pumping their native  
8 40,000 acre-feet?  
9 **A. A portion -- well, they would -- they would**  
10 **operate a portion of it but not the full 40,000**  
11 **acre-feet --**  
12 Q. Okay.  
13 **A. -- unless they needed it.**  
14 Q. Is there any other component to managing the  
15 aquifer full that you're referring to?  
16 **A. From the City or other water users?**  
17 Q. The City?  
18 **A. No, the City by not pumping their native water**  
19 **rights can maintain a higher water level.**  
20 Q. And is the City solely responsible for managing  
21 the aquifer full?  
22 **A. They're -- they're responsible for managing**  
23 **their own water rights.**  
24 Q. But the fullness of the aquifer is not solely  
25 dependent on the City?

1 this 1-acre area?  
2 **A. 10 feet above bedrock.**  
3 Q. Now let's talk about the same concept with  
4 respect to an aquifer maintenance credit. Let's  
5 say we start at water level of 10 feet below the  
6 bedrock, right?  
7 **A. Okay.**  
8 Q. And then let's say that the City sends a gallon  
9 of water to -- to the City for municipal use,  
10 they've taken it out of the Little Arkansas  
11 River, they've treated it, they send it directly  
12 to the City for use, would you agree with me  
13 that the level of this aquifer -- or this water  
14 level in our hypothetical is still 10 feet,  
15 would you agree?  
16 **A. Yes.**  
17 Q. Now let's say in the future the City cashes in  
18 this credit and they're going to take out the  
19 corresponding amount they sent to the City for  
20 use, would you agree with me now the water level  
21 would drop to 9 feet?  
22 **A. Yes.**  
23 **MR. STUCKY:** No further questions.  
24 **PRESIDING OFFICER:** Ms. Wendling.  
25 //

1 **A. Correct.**  
2 Q. Okay.  
3 **A. That's correct.**  
4 Q. Do we know that the water sent directly to town  
5 is the direct offset of water that would have  
6 been or could have been pumped from the Equus  
7 Beds?  
8 **A. It -- it could or could not be.**  
9 Q. But we don't know conclusively that it is a  
10 direct offset?  
11 **A. It's -- it all relies on the accounting from the**  
12 **City.**  
13 Q. Okay. You previously also talked about in the  
14 context of saturated thickness and practical  
15 saturated thickness that the aquifer properties  
16 are important. Can you elaborate on which  
17 aquifer properties you're referring to?  
18 **A. The aquifer properties of the practical**  
19 **saturated thickness are some zones that provide**  
20 **more water than other zones is what I mean. So**  
21 **the aquifer properties of the better aquifer**  
22 **will provide more water.**  
23 Q. And do you know if that has been analyzed in the  
24 context of figures 10 and 11?  
25 **A. Not that I'm aware of. But, Tessa, I'm not**

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1 sure.  
 2 Q. Okay.  
 3 **A. I'm sure test pumps were done, but I don't -- I**  
 4 **don't know the results.**  
 5 Q. Okay.  
 6 **MS. WENDLING:** May I approach the  
 7 witness?  
 8 **PRESIDING OFFICER:** Yes.  
 9 **BY MS. WENDLING:**  
 10 Q. Are you familiar with this book?  
 11 **A. Yes, absolutely.**  
 12 Q. Can you tell us what that is?  
 13 **A. This is Volume I of the Kansas Administrative**  
 14 **Regulations for 2009.**  
 15 Q. Sure. Can you turn to K.A.R. 5-1-1(k)?  
 16 **A. Can you -- what is it again?**  
 17 Q. 5-1-1(k), in the back of the definitions, this  
 18 would be the definition of basin storage area.  
 19 **MR. OLEEN:** Point of clarification,  
 20 Ms. Wendling, is this -- I don't recall if  
 21 that's the current volume of the  
 22 regulations. Is it your belief that --  
 23 **MS. WENDLING:** This is not the  
 24 current version. I'm looking at the  
 25 definition in page 4 at the time that Phase

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1 It was approved.  
 2 **A. I'm there.**  
 3 **BY MS. WENDLING:**  
 4 Q. Can you read that definition of basin storage  
 5 area?  
 6 **A. Basin storage area means the portion of the**  
 7 **aquifer's unsaturated zone used for aquifer**  
 8 **storage that has been defined -- I'm sorry, that**  
 9 **has defined horizontal boundaries and is**  
 10 **delimited by the highest and lowest index water**  
 11 **level elevations.**  
 12 Q. Okay. And as we've discussed yesterday, that  
 13 was the reg -- one of many regulations that was  
 14 changed?  
 15 **MR. OLEEN:** I object --  
 16 **A. I have to look.**  
 17 **MR. OLEEN:** -- I don't think that  
 18 regulation was discussed as has been  
 19 changed. I thought it was the definition  
 20 for --  
 21 **BY MS. WENDLING:**  
 22 Q. Okay. We've already read the current definition  
 23 this morning so I think you can compare.  
 24 **A. I can compare if you need me to.**  
 25 Q. That's okay, it's already on the record.

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1 **A. Okay.**  
 2 **MS. WENDLING:** No further questions.  
 3 **MR. OLEEN:** What's on the record?  
 4 **MS. WENDLING:** He read the  
 5 definition of basin storage area earlier  
 6 with Mr. Stucky. Thank you.  
 7 **PRESIDING OFFICER:** Mr. Oleen.  
 8  
 9 **REDIRECT EXAMINATION**  
 10 **BY MR. OLEEN:**  
 11 Q. Just one question, Mr. Letourneau, if you'd  
 12 please turn to what GMD2 has recently admitted  
 13 as Exhibit 81 (sic), it was those well logs.  
 14 You got them there?  
 15 **A. Got them.**  
 16 Q. I noticed -- well, at the top of each of  
 17 these -- let me back up. You went through an  
 18 exercise with Mr. Stucky about purported  
 19 calculations of practical saturated thickness  
 20 with respect to these two well logs; is that  
 21 correct?  
 22 **A. That's correct.**  
 23 Q. In box 4 of each of these well logs, do you see  
 24 where it -- it has a line regarding well's  
 25 static water level?

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1 **A. I see 3.**  
 2 Q. Box number 4 on the first page of each of these  
 3 well logs?  
 4 **A. Yes, I see that.**  
 5 Q. Okay. And what does it say, what's the input  
 6 data in response to that line item of well's  
 7 static water level for each of these well logs?  
 8 **A. IW8C says, well's static water level not**  
 9 **checked.**  
 10 Q. And how about for IW14C?  
 11 **A. It's the same, static water level not checked.**  
 12 Q. My question to you is that wasn't brought up in  
 13 Mr. Stucky's exercise about the calculations  
 14 of -- purported calculations of practical  
 15 saturated thickness. Does that matter for  
 16 purposes of attempting to calculate practical  
 17 saturated thickness that these well logs say  
 18 that the well's static water level wasn't  
 19 checked?  
 20 **A. Well, it doesn't give us any aquifer**  
 21 **information, if that -- if that static level is**  
 22 **not checked, it doesn't tell us if it's confined**  
 23 **aquifer or unconfined aquifer.**  
 24 Q. So then does that, and you tell me, does that  
 25 call into question these purported claims of

1 Mr. Stucky about the practical saturated  
2 thickness for these wells and what that means as  
3 far as the availability of water?

4 **A. Absolutely. All this well log information  
5 brings into question everything, I mean, that's  
6 what we were hoping that the model had taken  
7 care of.**

8 Q. But I mean -- I mean the fact that these two  
9 well logs don't indicate where the well's static  
10 water level was noted at?

11 **A. That's correct.**

12 Q. Does that affect one's ability to determine  
13 practical saturated thickness with respect to  
14 these wells?

15 **A. Well, the practical saturated thickness is the  
16 sands and gravels, I mean, that's -- I mean, in  
17 my mind. I'd have to talk to other people.  
18 Never talked to anybody about it. But the  
19 practical saturated thickness is sands and  
20 gravels, okay, but the aquifer properties, what  
21 that static water level would be important to  
22 know if it's higher than the sands or -- so  
23 there's -- there's a lot of information that I  
24 would hope the model had taken care of.**

25 **MR. OLEEN:** Nothing further.

1 **A. That's correct.**

2 Q. And each was still a single data point in an  
3 index cell, correct?

4 **A. That's correct.**

5 Q. And I think you had indicated earlier that you  
6 can't determine from a single data point and the  
7 lithographic data for that single data point the  
8 lithography for an entire index cell; is that  
9 still correct?

10 **A. That's correct.**

11 Q. And, Mr. Letourneau, to the extent that the City  
12 relies on these wells for environmental  
13 reporting purposes, what does that have to do  
14 with practical saturated thickness?

15 **A. It doesn't.**

16 Q. In Counsel's revised hypothetical where we  
17 started with water levels 10 feet above bedrock  
18 and there was -- there was space in Counsel's  
19 hypothetical to inject water, did you notice  
20 that facet of the changed hypothetical?

21 **A. Yes.**

22 Q. So the step of pumping the aquifer down to do  
23 the recharge was left out of Counsel's  
24 hypothetical?

25 **A. Correct.**

1 **PRESIDING OFFICER:** Mr. McLeod.

2  
3 **RE-CROSS EXAMINATION**  
4 **BY MR. MCLEOD:**

5 Q. Mr. Letourneau, Mr. Stucky had asked you about  
6 portions of the regulations that refer to the  
7 requirement that source water not degrade  
8 groundwater quality, and I think you indicated  
9 that that would mean that you could -- you could

10 satisfy that by not taking water out or by  
11 making sure that the water you put in was of  
12 equal or greater quality than what was there.  
13 Does that, again, go to the issue that you  
14 previously had mentioned on water quality that  
15 leaving the water in situ instead of withdrawing  
16 and adding can be better for water quality?

17 **A. Yes.**

18 Q. On each of the additional index well logs that  
19 Mr. Stucky asked you about, was the practical  
20 saturated thickness shown on those well logs  
21 adequate for the wells?

22 **A. Yes.**

23 Q. And each of those wells was still an index  
24 observation well and not a production well,  
25 correct?

1 Q. And so it was -- it was posed as basically  
2 starting with the same static water level and  
3 withdrawing a credit after injection versus  
4 withdrawing a credit with no injection, correct?

5 **A. That's correct.**

6 Q. A fundamentally different hypothetical than the  
7 situation where the City has to pump the aquifer  
8 down at the beginning to make space for the  
9 recharge, correct?

10 **A. That's correct.**

11 Q. And, again, in this proposal, the City is not  
12 asking to be granted AMCs for periods during  
13 which it could do physical recharge, is it?

14 **A. That's correct.**

15 Q. So the whole premise of the proposal is that if  
16 the City has the ability to inject physical  
17 recharge, the City will inject physical recharge  
18 and the credit will be a physical recharge  
19 credit, correct?

20 **A. That's correct.**

21 Q. And so Counsel's hypothetical really didn't  
22 address the situation posed by the proposal, did  
23 it?

24 **A. No.**

25 **MR. MCLEOD:** I don't have further

Page 1993

1 questions for the witness.

2 **A. When do I get to say enough is enough?**

3 **MR. STUCKY:** Mr. Letourneau -- well,

4 actually, I'm willing to say enough is

5 enough. We'll -- I won't ask further

6 questions in the interest of getting this

7 done in five days, I'll be done with my

8 questioning so ...

9 **PRESIDING OFFICER:** Ms. Wendling.

10 **MS. WENDLING:** No further questions.

11 **PRESIDING OFFICER:** I'm seeing if I

12 have any questions.

13 **A. Sure. I'm going to leave this here so I'll pull**

14 **my gross straw out of it.**

15 **PRESIDING OFFICER:** Just a few.

16 **A. Sure.**

17 **PRESIDING OFFICER:** And maybe you

18 know these off the top of your head, maybe

19 you don't, that's fine, just say if you

20 don't. Have any permits either for new

21 appropriation or a change appropriation,

22 have any of those been approved since the

23 approval of the Phase II order but before

24 this proposal that would possibly come

25 under consideration in terms of junior or

Page 1994

1 senior rights?

2 **A. Any other than ASR?**

3 **PRESIDING OFFICER:** Correct.

4 **A. There have been a few, I believe irri -- one or**

5 **two irrigation water rights that have been**

6 **approved since Phase II, I think, yeah. There**

7 **was some that were -- they were able to wedge in**

8 **and meet safe yield.**

9 **PRESIDING OFFICER:** And as I look

10 back at items in the record regarding the

11 Phase I approvals, there was reference

12 made, there was a findings and order to

13 reflect changes in point of diversion

14 regarding the Phase I wells, there was

15 reference to change applications having

16 been filed to change point of diversion.

17 **A. Okay.**

18 **PRESIDING OFFICER:** I could not see

19 if those change applications had been

20 approved or if by referring to them in the

21 findings and order that was deemed the

22 approval?

23 **A. Well, Madam Hearing Officer, I would have to**

24 **review the file to make that determination. I**

25 **don't know off the top of my head.**

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1 **PRESIDING OFFICER:** Okay.

2 **A. I do know that there were changes to points of**

3 **diversion to provide authority for recharge and**

4 **production, but I don't -- I'd have to look at**

5 **the file to see if those have been approved.**

6 **PRESIDING OFFICER:** Okay. And I'll

7 be more specific because I would like to

8 get the answer to this.

9 **A. Okay.**

10 **PRESIDING OFFICER:** Or at least be

11 pointed to where in the record the answer

12 is.

13 **A. Well, Tim or --**

14 **PRESIDING OFFICER:** There were

15 change -- I'm sorry.

16 **A. I'm sorry, Tim or Doug or Jeff may know so ...**

17 **PRESIDING OFFICER:** Okay. There

18 were changes -- applications to change

19 point of diversion from bank storage wells

20 to surface water pump sites under four

21 application numbers, and two were submitted

22 and then two were submitted separately, so

23 a total of four. And the file numbers were

24 45,572 and 45,575, and those I wrote down

25 November 14, 2005, I think that's the

Page 1996

1 application date; and the other two file

2 numbers were 45,573 and 45,574 and

3 January 30, 2006, I think was the

4 application date for those. And then the

5 findings and order that was issued

6 August 1st of 2006 was issued to modify the

7 Phase I approvals to reflect those changes,

8 so that tells me the changes were either

9 assumed approved or an actual approval was

10 issued.

11 **A. I'm sure they were approved.**

12 **PRESIDING OFFICER:** And that's all I

13 really want to know is if there were

14 separate approvals of those change

15 applications?

16 **A. Okay.**

17 **MR. OLEEN:** Madam Hearing Officer,

18 could you tell me again the date of the ASR

19 order that referenced these --

20 **PRESIDING OFFICER:** The findings and

21 order was August 1, 2006.

22 **A. Jeff, are you able to find it? Tim may know.**

23 **MR. BOESE:** Can I speak? Or would

24 you prefer to wait until I'm on the stand?

25 I think I know the answer to most of your

1 questions; I don't know about the specific  
2 file number, but I know the answer to most  
3 of your questions.  
4 **PRESIDING OFFICER:** If you know,  
5 we'll take it when you take the stand.  
6 **MR. BOESE:** Okay.  
7 **PRESIDING OFFICER:** We can answer  
8 that a little bit later on.  
9 My next question is that some sort of  
10 KDHE, Kansas Department of Health and  
11 Environment, approval is necessary or has  
12 been necessary for the approval of the  
13 Phase I and Phase II projects; is that  
14 right?  
15 **A. Correct.**  
16 **PRESIDING OFFICER:** And is KDHE  
17 approval required for the approval of this  
18 modification?  
19 **A. It's a modification to Phase II, so KDHE's**  
20 **approval is still there.**  
21 **PRESIDING OFFICER:** Does KDHE need  
22 to be asked for their approval for the  
23 modified changes?  
24 **A. Probably not necessary but we can -- we can sure**  
25 **send it to them, definitely.**

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1 **PRESIDING OFFICER:** Okay. So KDHE  
2 has not been asked?  
3 **A. Not that I'm aware of. Because their approval**  
4 **is already there.**  
5 **PRESIDING OFFICER:** And a question,  
6 Ms. Wendling, regarding your clients, who  
7 are collectively referred to as the  
8 Intervenors, I assume somewhere back in the  
9 archives of this case, there's information  
10 on water rights they own? Those -- that  
11 information is -- I think should be a part  
12 of the record if it isn't.  
13 **MS. WENDLING:** Volume II is all the  
14 permit information for the Intervenors.  
15 **PRESIDING OFFICER:** Okay. Is there  
16 any objection to the permit inter -- what  
17 Ms. Wendling describes as the permit  
18 information for all of her clients to be a  
19 matter of record, any objection to the  
20 admission of those?  
21 **MR. STUCKY:** No.  
22 **MR. OLEEN:** Extremely soft objection  
23 in that I haven't gone through really those  
24 documents that are in that binder; I  
25 thought that would be something that her

1 witnesses might testify to. I don't -- I  
2 certainly don't object to you taking  
3 judicial notice of those permits, whatever  
4 they are; I just don't know if what's in  
5 that binder is --  
6 **PRESIDING OFFICER:** And perhaps I'm  
7 getting ahead of myself, is this something  
8 that you were going to introduce at a later  
9 point in time?  
10 **MS. WENDLING:** I had planned on  
11 calling three of the Intervenors but not  
12 all of them, and we may or may not refer to  
13 their permit documents, I don't know. I  
14 wouldn't have any reason to introduce all  
15 of them as exhibits because only three  
16 Intervenors will be ...  
17 **PRESIDING OFFICER:** Okay. Then I'm  
18 going to suspend my request for this  
19 information at this time and we'll address  
20 it when you present your case.  
21 And, Mr. Letourneau, regarding the  
22 discussion of the draft conditions should  
23 the City's proposal be approved, there were  
24 draft conditions, they've been referred to  
25 as 12 and 13 about protecting existing

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1 domestic well owners from water quantity or  
2 quality problems that may be caused by the  
3 City, and these suggested conditions  
4 describe how the City will, as I think you  
5 said, make them whole. If there -- if that  
6 should come to pass, if the approval comes  
7 forward for the proposal and there are  
8 claims by existing domestic well owners  
9 within 660 feet that this new activity  
10 impairs them in some way, impacts them,  
11 then does the chief engineer have  
12 jurisdiction, or is it your view that the  
13 chief engineer would have jurisdiction to  
14 enforce those conditions, or who would  
15 enforce those?  
16 **A. Well, that's why it was so important to put**  
17 **those as permit conditions because the chief**  
18 **engineer has full authority to enforce permit**  
19 **conditions.**  
20 **PRESIDING OFFICER:** Okay.  
21 **A. And we would -- we would treat them like any**  
22 **other terms, conditions, and limitations of a**  
23 **permit or water right.**  
24 **PRESIDING OFFICER:** I think that's  
25 all I have.



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1 **A. Okay.**  
 2 **PRESIDING OFFICER:** You are excused.  
 3 **A. Thank you.**  
 4 **PRESIDING OFFICER:** And it's about a  
 5 quarter to 10:00, let's take about a  
 6 ten-minute break.  
 7 (Thereupon, a recess was taken;  
 8 whereupon, the following was had.)  
 9 **PRESIDING OFFICER:** Okay. We're  
 10 back on the record. Mr. Oleen?  
 11 **MR. OLEEN:** DWR has no further  
 12 witnesses and rests its case, so to speak.  
 13 **PRESIDING OFFICER:** Thank you.  
 14 Mr. Stucky.  
 15 **MR. STUCKY:** I call Mr. Boese to the  
 16 stand and note for the record how he's no  
 17 longer sitting by me anymore.  
 18 **PRESIDING OFFICER:** Oh, okay.  
 19 **MR. MCLEOD:** Madam Hearing Officer,  
 20 before we swear and start with this  
 21 witness, it probably makes sense so we  
 22 don't interrupt things later to go ahead  
 23 and raise and get rulings on the matters  
 24 that relate to exclusion of certain  
 25 subjects from the testimony of the witness

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1 due to the manner of disclosure or  
 2 nondisclosure of those issues in the expert  
 3 report that he furnished.  
 4 Mr. Stucky, is his report one of your  
 5 exhibits?  
 6 **MR. STUCKY:** Yes.  
 7 **MR. MCLEOD:** And number what?  
 8 **MR. STUCKY:** 39.  
 9 **MR. MCLEOD:** So if the hearing  
 10 officer could refer to that exhibit.  
 11 **PRESIDING OFFICER:** I have it.  
 12 **MR. MCLEOD:** Okay. And by way of  
 13 refresher, though probably everyone  
 14 recalls, in a barrage of pretrial motions,  
 15 it was established that witnesses  
 16 testifying as experts would need to include  
 17 the facts or documents that provided the  
 18 basis for the opinions that they were  
 19 stating, and it was also the District's own  
 20 very fervently advanced position that were  
 21 any calculations relied upon, those  
 22 calculations needed to be disclosed and the  
 23 persons performing those calculations and  
 24 the manner of performing the calculations  
 25 and the gathering of the data needed to all

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1 be described in the report.  
 2 With that preface, I call your attention  
 3 to the fifth page of Mr. Boese's report,  
 4 the next-to-the-last paragraph and the last  
 5 statement in that paragraph which suggests  
 6 that certainly, most certainly the report  
 7 says, MDS would be negatively impacted by  
 8 the proposal and this should be further  
 9 evaluated. Indeed, adversely affecting MDS  
 10 would be considered an unreasonable  
 11 lowering of the static water level. And  
 12 there are no references to any supporting  
 13 facts or documents nor any explanation as  
 14 to how that conclusion stated there was  
 15 reached by the witness.  
 16 Beginning at the very bottom of the  
 17 page, the sentence that starts there in the  
 18 last paragraph and carries over to the next  
 19 page, certainly, the lowering of the  
 20 minimum index levels and allowing the City  
 21 to pump the aquifer below the current  
 22 minimum index levels will increase the  
 23 hydraulic gradient and increase the  
 24 migration of the salt contamination.  
 25 Again, as to that statement, no reference

Page 2004

1 to any supporting facts or documents nor  
 2 the manner in which that conclusion was  
 3 reached or any supporting calculations.  
 4 And turning to page 9, in the text that  
 5 begins in the carry-over paragraph at the  
 6 top -- actually, if we go back to page 8,  
 7 the problem begins on page 8 in the last  
 8 paragraph with the statement, clearly,  
 9 allowing accumulation of AMCs is  
 10 appropriation of additional groundwater in  
 11 excess of the safe yield of the source of  
 12 supply. AMCs would not only further  
 13 over-appropriate the source of supply in  
 14 the City's Equus Beds Aquifer well field  
 15 area but would also be a takings of the  
 16 prior water right holders in the area, as  
 17 their source of supply would be  
 18 appropriated by another junior water right.  
 19 The City's proposal would allow the City to  
 20 appropriate 120,000 acre-feet of  
 21 groundwater in an area that the source of  
 22 supply for the proposed AMCs is already  
 23 fully dedicated to existing senior water  
 24 rights, based on safe yield calculations.  
 25 None of the supporting facts or documents

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1 nor, indeed, the calculations that are  
2 referenced have been furnished in support  
3 of that statement.  
4 And if we go to page 11, the entirety of  
5 paragraph 13, there are no references to  
6 supporting facts or documents but only the  
7 general statement that these conclusions  
8 are offered based on Mr. Boese's experience  
9 and expertise, with no identification of  
10 the facts or documents that he took into  
11 account via that experience and expertise  
12 to support these conclusions.  
13 Down in the documents and references  
14 reviewed and used for the report, again,  
15 you see no mention of any safe yield  
16 calculations, establishing for purposes of  
17 the report that Mr. Boese, in fact, didn't  
18 consult safe yield calculations for  
19 purposes of the conclusions that he stated  
20 were based on safe yield calculations.  
21 And so as to each of those matters,  
22 Mr. Boese has not complied with the  
23 standards that have been enforced in  
24 pretrial for City experts, and the City  
25 would request that as to each of those

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1 matters identified the witness be precluded  
2 from testifying. And further that to the  
3 extent the report is admitted in evidence,  
4 even though it's cumulative in its  
5 entirety, those -- those segments of the  
6 report should be redacted if that occurs.  
7 **PRESIDING OFFICER:** Mr. Stucky.  
8 **MR. STUCKY:** Thank you. Well, my  
9 answer to this is severalfold. First of  
10 all, we had an opportunity to file motions  
11 in limine and -- and brief these particular  
12 issues through motions in limine. And for  
13 the record, I think this hearing officer  
14 can, of course, note that there was no  
15 motion in limine that was filed with  
16 respect to these concerns against  
17 Mr. Boese's report. And because of that,  
18 because we're hearing these issues for the  
19 first time during a trial, during the eve  
20 of trial, I don't think these concerns are  
21 properly raised. They should have been  
22 raised by our motion date. We had a motion  
23 date in this case for a reason, that's --  
24 that's number one.  
25 Number two, we lodged concerns with

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1 respect to the City's expert reports as far  
2 as the technical components of it, and we  
3 filed those motions well in advance of any  
4 kind of motion date; and we filed our  
5 original concerns, and the City worked to  
6 modify their expert reports. And so what I  
7 would like to notify -- or note for the  
8 record is the City had months and months  
9 that they were given time to correct their  
10 expert reports because we filed our motion  
11 in limine in advance, you gave them time to  
12 correct their expert reports so they were  
13 able to reference more references to the  
14 proposal or technical aspects of the  
15 proposal, and so the City was given an  
16 opportunity to correct their expert reports  
17 in that fashion because that concern was  
18 raised.  
19 And so distinguish that with raising  
20 this concern for the first time on the  
21 record; whereas, the City got months and  
22 months to correct their expert reports  
23 because we complied with the motion  
24 deadline, here we have a situation where  
25 this is raised for the first time on the

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1 record, there's no opportunity to correct  
2 expert reports. Of course, we could  
3 continue this hearing four or five months,  
4 and Mr. Boese could be afforded the same  
5 opportunity that the City was given with  
6 respect to their experts, but I think that  
7 the point is well made that based on that  
8 distinguish -- distinguishing between what  
9 happened in those two situations, the City  
10 would certainly be precluded from raising  
11 these concerns at this late juncture in the  
12 middle of a trial.  
13 But further what I would point out to  
14 the hearing officer is if we were to look  
15 at the City's expert reports and the  
16 amended expert reports that are utilized in  
17 this case, we still raised concerns that  
18 there were just cursory statements, that  
19 general references were made to the  
20 proposal document, that there was just  
21 cursory -- cursory references. In  
22 Mr. Boese's expert report at the end of his  
23 expert report, he references, in fact, a  
24 whole dearth of different documents that he  
25 considered and he looked at as he prepared

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1 his expert report. And so certainly he can  
 2 reference those as it helps to formulate  
 3 his opinion.  
 4 But, additionally, as a final point in  
 5 this regard, we have a detailed exhibit  
 6 notebook with a number of exhibits that the  
 7 City has had for a long time in their  
 8 possession, and Mr. Boese will be  
 9 referencing those throughout his testimony  
 10 to help substantiate or build any opinions  
 11 that he may have in that regard. So based  
 12 on the fact that the City was afforded  
 13 leniency in this regard and given a chance  
 14 to amend their expert reports, my  
 15 suggestion is rather than to continue this  
 16 hearing to give Mr. Boese that same  
 17 courtesy, my suggestion is that Mr. Boese  
 18 be allowed to reference these technical  
 19 documents as he testifies to help further  
 20 substantiate these references in his expert  
 21 report.  
 22 **MR. MCLEOD:** And I just need to  
 23 refresh Counsel's recollection and correct  
 24 some things that he has inadvertently  
 25 misstated. If you recall back to the time

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1 when motion papers were being exchanged,  
 2 the City pointed out some problems with  
 3 Mr. Boese's report, albeit not in a motion  
 4 but in its response to the District's  
 5 motion to show the extent and the degree to  
 6 which the District was being hypocritical  
 7 and attempting to assert and apply  
 8 standards that the District itself was not  
 9 following, and so some deficiencies in  
 10 Mr. Boese's report were specifically noted  
 11 in those motion response papers. But,  
 12 indeed, the District chose to ignore them  
 13 for all these many months.  
 14 So the idea that Mr. Boese did not have  
 15 an opportunity to correct these  
 16 deficiencies in his report, I think, is a  
 17 fallacy. The District had an opportunity,  
 18 the District was informed. In fact, when  
 19 we worked out some issues with Mr. Romero's  
 20 expert report pretrial, Counsel pressed for  
 21 a general -- a general consent from the  
 22 City to all other expert reports, and I  
 23 think I made it very clear at that time as  
 24 well that, indeed, the City would still  
 25 have problems that it had identified with

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1 respect to some other expert reports.  
 2 Most importantly, Your Honor, I believe  
 3 in your hearing order that resolved the  
 4 pretrial motions that you specifically  
 5 ordered that the parties would retain these  
 6 types of objections for hearing if they had  
 7 them, and what the City is seeking is  
 8 simple parity and fairness, let the rules  
 9 that have been applied to the other parties  
 10 be applied to the District as well.  
 11 **PRESIDING OFFICER:** As I referenced  
 12 this morning, administrative hearings, the  
 13 rules of evidence are more relaxed, and  
 14 when it comes to admissibility of evidence,  
 15 the Presiding Officer's discretion is quite  
 16 broad.  
 17 We did have quite a number of prehearing  
 18 motions, there was an opportunity to raise  
 19 this earlier, I did not wish to preclude  
 20 any relevant or substantial concerns that  
 21 may come up once we got to the hearing.  
 22 But nonetheless, I believe that I am  
 23 possessed of the discretion to allow the  
 24 admission of this expert report, I can give  
 25 it the weight and the credibility that I

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1 believe it deserves or does not deserve.  
 2 And I do require, Mr. Stucky, that  
 3 throughout the course of this testimony,  
 4 these statements that Mr. Boese has made  
 5 will be substantiated by the kind of  
 6 foundation that Mr. McLeod is seeking. So  
 7 having said that, please go ahead.  
 8 **MR. STUCKY:** Thank you.  
 9  
 10 TIM BOESE,  
 11 having been first duly sworn, was  
 12 examined and testified as follows:  
 13  
 14 **MR. STUCKY:** Your Honor, there was  
 15 one housekeeping item that was pointed out  
 16 to me. Exhibit 81 was noted as the  
 17 drilling logs, it was pointed out to me  
 18 that there was actually already an  
 19 Exhibit 81.  
 20 **PRESIDING OFFICER:** Oh.  
 21 **MR. STUCKY:** And so I'm asking that  
 22 those drilling logs be relabeled as the  
 23 District's 82 for the purposes of this  
 24 record.  
 25 **PRESIDING OFFICER:** Thank you, I

1 will make a note of that, just a moment.  
2 Thank you, go ahead.  
3  
4 **DIRECT EXAMINATION**  
5 **BY MR. STUCKY:**  
6 Q. You already stated your name is Tim Boese,  
7 correct?  
8 **A. I didn't, but I will, yes, my name is Tim Boese,**  
9 **B-O-E-S-E is the last name.**  
10 Q. And, Mr. Boese, how are you currently employed?  
11 **A. I'm the manager of the Equus Beds Groundwater**  
12 **Management District No. 2.**  
13 Q. Mr. Boese, I'd ask that you turn to Exhibit 39  
14 in that notebook before you, and we just  
15 discussed that exhibit, so hopefully you have it  
16 in front of you?  
17 **A. I don't but I will.**  
18 Q. Mr. Boese, do you know Exhibit 39 to be your  
19 expert report?  
20 **A. It is.**  
21 Q. Toward the end of that expert report, there's a  
22 signature where you have signed that expert  
23 report, correct?  
24 **A. Yes.**  
25 Q. And do the opinions that you state in that

1 expert report, are those still your opinions as  
2 you're sitting here today?  
3 **A. They are.**  
4 **MR. STUCKY:** I would like to just  
5 move to admit Exhibit 39 subject to  
6 foundation on those -- on those points that  
7 Mr. McLeod raised, I would ask to move to  
8 admit it subject to later foundation on  
9 those points.  
10 **PRESIDING OFFICER:** Any objection  
11 that hasn't already been lodged?  
12 **MR. MCLEOD:** I would say let's wait  
13 for the foundation for the admission.  
14 **PRESIDING OFFICER:** Mr. Stucky?  
15 **MR. STUCKY:** I can lay a foundation  
16 and admit it at the end, that's fine.  
17 **PRESIDING OFFICER:** Okay, thank you.  
18 **BY MR. STUCKY:**  
19 Q. I would ask that you turn to -- in your expert  
20 report to your resume or your CV in your expert  
21 report.  
22 **A. Well, I'm not sure that it got placed in here,**  
23 **Dave. We submitted an updated one, would you**  
24 **mind bringing me -- bringing me the updated one?**  
25 **I think all the parties do have the updated one,**

1 **but I'm not sure where it ended up. Thank you.**  
2 **PRESIDING OFFICER:** Thank you.  
3 **MR. STUCKY:** For the record, this is  
4 an updated CV or resume that we furnished  
5 to other counsel in this case, I think  
6 months ago, I believe, I'm not sure of all  
7 my dates here, but it's something that  
8 they've had in advance, and what we're  
9 asking, just to keep these exhibits neat  
10 and keep them in one logical location,  
11 we're asking to have permission to include  
12 this CV as part of Exhibit 39, which is his  
13 expert report?  
14 **MR. MCLEOD:** Can we just get a short  
15 description of what's different?  
16 **MR. STUCKY:** A short description of  
17 what's different -- well, we can ask the  
18 witness.  
19 **BY MR. STUCKY:**  
20 Q. What's different, a short description of what's  
21 different between your CV in the expert report  
22 and this new CV, just a short description in a  
23 minute or less?  
24 **A. There was a updated, essentially an expanded**  
25 **version of my job duties for the most part and**

1 **probably added in, if I remember right, a few**  
2 **other committees and associations that I have or**  
3 **have served on that I failed to -- to place on**  
4 **my short CV that was with my expert report. So**  
5 **it's -- I don't think there's anything**  
6 **necessarily new, it's more of an expansion of my**  
7 **duties that I've done with the District over the**  
8 **last 28 years, just to clarify my different job**  
9 **aspects.**  
10 **MR. STUCKY:** And, actually, I'll  
11 just make this simple since there was an  
12 objection to your original expert report,  
13 I'd move to admit this modified CV as the  
14 District's Exhibit 83.  
15 **PRESIDING OFFICER:** Any objections?  
16 Hearing none, 83 will be admitted.  
17 **BY MR. STUCKY:**  
18 Q. So, Mr. Boese, tell me what your -- your college  
19 education is.  
20 **A. I have a bachelor's of general studies from Fort**  
21 **Hays State University.**  
22 Q. When you were in college, did you take any  
23 classes in geology?  
24 **A. I did.**  
25 Q. Did you take any classes in engineering?

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1 **A. I did.**  
 2 Q. Did you take any classes in hydrology?  
 3 **A. I don't know if it was specific hydrology**  
 4 **classes, but they were involved with at least**  
 5 **one or two of the geology classes that did have**  
 6 **hydrology as a component of that.**  
 7 Q. What is OTJ training regarding water rights?  
 8 **A. On-the-job training.**  
 9 Q. And you have got a fair amount of on-the-job  
 10 training with regard to water rights?  
 11 **A. That would be an accurate statement.**  
 12 Q. Okay. And how do you -- how have you done that?  
 13 **A. Well, I began my work with the District in 1992,**  
 14 **January of 1992, so I was trained in water**  
 15 **rights from both the District manager at the**  
 16 **time, which was Mike Dealy, and from the**  
 17 **District hydrologist, Don Koci, at the time when**  
 18 **I was originally employed.**  
 19 Q. So in addition to your college education, would  
 20 it suffice to say that you've also got training  
 21 on hydrology, geology, water rights, modeling as  
 22 you've been on the job with the -- with the  
 23 District; is that true?  
 24 **A. That is correct.**  
 25 Q. When did you -- when were you first employed by

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1 the Equus Beds Groundwater Management District?  
 2 **A. I began employment, I believe it was January**  
 3 **27th of 1992.**  
 4 Q. And, Mr. Boese, if I say the District, would --  
 5 could we -- could you understand that that would  
 6 mean the Equus Beds District throughout my  
 7 questioning?  
 8 **A. Yes.**  
 9 Q. So you started with the District in 1992, how  
 10 did you start?  
 11 **A. I started out as what is termed a hydrologic**  
 12 **technician, I held that position from 1992**  
 13 **through 2000 -- most of 2005.**  
 14 Q. Now, the concept of a hydrologic technician is  
 15 in your resume, and it looks like you outlined a  
 16 number of items that are -- that a hydrologic  
 17 technician is responsible for, but could you  
 18 sum -- without reading them, could you sum it up  
 19 in a minute or less what some of the things are  
 20 a hydrologic technician could do?  
 21 **A. I'm not sure I could do it in a minute, but I'll**  
 22 **try. It's a multifaceted position which**  
 23 **conducts most of the data collection for the**  
 24 **District; that would include water level**  
 25 **measurements, water quality samples, performing**

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1 **inspections, investigations, maintaining**  
 2 **equipment, including our weather stations and**  
 3 **our sampling and measuring equipment, repairing**  
 4 **water meters, assisting the public as needed in**  
 5 **filing various water permit applications and**  
 6 **change applications, collecting precipitation**  
 7 **data. I could go on and on, but it's a -- it's**  
 8 **a sort of field position and an office position**  
 9 **with a lot of time spent out in the field**  
 10 **collecting data and conducting inspections and**  
 11 **investigations.**  
 12 Q. So as a hydrologic technician, would you have  
 13 been responsible for both collecting data and  
 14 helping to analyze that data?  
 15 **A. Yes.**  
 16 Q. And during that time, who would you have been  
 17 working under, who was in charge of the  
 18 Groundwater Management District at that time?  
 19 **A. That was -- that was Mike Dealy.**  
 20 Q. So Mike Dealy would have helped, if you will,  
 21 train you in water rights or how you were  
 22 administering the data, if you will?  
 23 **A. Yes, I'd say that, along with Mr. Koci.**  
 24 Q. Okay. And Mr. Koci was also employed by the  
 25 Groundwater Management District at that time?

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1 **A. He was until 2004, I believe. I might have to**  
 2 **look at Don to see if he nods, but I believe it**  
 3 **was 2004 when he left the District, so most of**  
 4 **that time when I was hydrologic technician, yes.**  
 5 Q. Is Mr. Koci in the room?  
 6 **A. He is.**  
 7 Q. Can you point him out for the record?  
 8 **A. He's the gentleman in the maroon-ish shirt at**  
 9 **the City's table.**  
 10 Q. And what was Mr. Dealy's role, and what was  
 11 Mr. Koci's role at that time?  
 12 **A. Mr. Dealy was the manager, and Mr. Koci was the**  
 13 **hydrologist for the District.**  
 14 Q. And do you know what their background and  
 15 education was to help credential them to train  
 16 you?  
 17 **A. I believe they both have degrees in geology.**  
 18 Q. When you were a hydrologic technician, did you  
 19 have the occasion to analyze well logs?  
 20 **A. I did.**  
 21 Q. And as you analyzed well logs, what kind of data  
 22 would you look at?  
 23 **A. Depth of water, the lithologic log, the sands**  
 24 **and gravels, the clays, the bedrock, also**  
 25 **witnessed monitoring wells being drilled. The**

1 **District owns and maintains over 500 monitoring**  
2 **wells, so as we've installed new ones or**  
3 **replaced wells, I would have also witnessed that**  
4 **drilling, logged the hole, ensured proper**  
5 **construction to District's specifications.**

6 Q. As your time as a hydrologic technician, how  
7 many well logs would you say you looked at,  
8 hundreds?

9 **A. Oh, yes, I'm sure, over hundred -- hundreds,**  
10 **yes.**

11 Q. As a hydrologic technician during that 13-year  
12 period, it looks like, how many well samples do  
13 you think you would have taken in that time?

14 **A. Thousands as far as samples from our monitoring**  
15 **wells or for -- or from production wells or**  
16 **other wells, it's -- it can vary from 200 to 500**  
17 **a year depending on -- on the needs of the**  
18 **District. So do the math, 13 years, probably at**  
19 **least 200 to 300 per year.**

20 Q. I note that it states as a hydrologic technician  
21 you performed -- helped perform water quality  
22 laboratory analysis, what did that detail, and  
23 you reference fluoride specifically, what --  
24 what did that entail?

25 **A. The District did have a lab -- water quality**

1 **laboratory, a fairly small laboratory, water**  
2 **quality area that we could -- we could perform**  
3 **analysis, and we did chloride and conductivity,**  
4 **specific conductance. We were a certified lab**  
5 **through KDHE for a period of time. We are no**  
6 **longer a certified lab.**

7 Q. And so at least in the past, analyzing this  
8 water quality data is something you were  
9 familiar with; is that right?

10 **A. Yes.**

11 Q. And it also looks that -- looks like you were  
12 responsible for plugging wells and meter  
13 inspections, a number of other requirements that  
14 you had in your job as well; is that right?

15 **A. Yes, it's -- it was a multifaceted position.**

16 Q. Okay. After -- after your time as a hydrologic  
17 technician, in 2005, did your job title change?

18 **A. It did, I began serving as the District**  
19 **hydrologist for a couple of years. During that**  
20 **time had some stints as interim manager also.**  
21 **Between 2006 and 2007, I served as interim**  
22 **manager for -- I can't say for how long each**  
23 **time but a few months each time.**

24 Q. And the reason for the interim manager position,  
25 why were you -- did you find yourself as an

1 interim manager during that period?

2 **A. Mr. Dealy resigned so the Board appointed me as**  
3 **interim manager while they conducted a search**  
4 **for a new manager. The District did hire a new**  
5 **manager, and he was with us for a short amount**  
6 **of time, his name was Lee Wheeler. Upon his**  
7 **resignation, I then served again as interim**  
8 **manager until the Board then appointed me as**  
9 **permanent manager.**

10 Q. Just tell me in a -- in a nutshell or a few  
11 minutes what your job was as a hydrologist.

12 **A. Well, it still would have been doing many of the**  
13 **same positions as a hydrologic technician, so I**  
14 **won't go into great detail as that because the**  
15 **hydrologist does do fieldwork also. I also**  
16 **would have been in charge of our water rights**  
17 **and protection programs. I would have been**  
18 **reviewing applications, metering -- meter**  
19 **inspections, maintaining our databases, our**  
20 **water quality and our -- and our points of**  
21 **diversions or well database, making**  
22 **recommendations to the Division of Water**  
23 **Resources, either for my manager to sign, or if**  
24 **I was interim manager for me to sign those**  
25 **recommendations regarding water permit**

1 **applications. Writing reports for the Board,**  
2 **particularly if the Board was looking at a**  
3 **request for a waiver, an exemption from some of**  
4 **our rules and regulations on a particular**  
5 **application, I would have authored those --**  
6 **those reports and presented that to our Board.**  
7 **Performing safe yield evaluations, spacing**  
8 **evaluations on water permit applications. Gosh,**  
9 **still collecting the data, analyzing data,**  
10 **making water level hydrographs. We produce an**  
11 **annual water level map, so I would have been**  
12 **doing that at the time.**

13 Q. You just mentioned hydrographs, tell me what --  
14 what modeling work you did as a hydrologist for  
15 the District.

16 **A. Well, we would have -- obviously when an**  
17 **applicant was requesting exemption or exception**  
18 **to our regulations, we would have done drawdown**  
19 **calculations, particularly if they're asking for**  
20 **spacing waivers, so we would have done drawdown**  
21 **calculations using the Theis equation generally.**  
22 **Also incorporated some modeling software that we**  
23 **had, I think it was called WinFlow; for -- for**  
24 **those more complicated drawdown scenarios, I**  
25 **would have done some of that. Obviously taken**

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1 **the hydrographs and -- or the water level data**  
 2 **and projected that onto hydrographs for board**  
 3 **review.**  
 4 Q. Would you have also -- so it sounds like you did  
 5 some modeling while you were the hydrologist.  
 6 Is that a true statement?  
 7 **A. That's true.**  
 8 Q. Did you also look at modeling from other  
 9 entities outside the District?  
 10 **A. Yes, particularly if an applicant was requesting**  
 11 **a waiver and they provided their own -- their**  
 12 **own modeling, or if something we had requested**  
 13 **on a staff level for some additional modeling,**  
 14 **then we would review -- we would review that**  
 15 **model for -- make sure the inputs were correct,**  
 16 **the parameters that they established, the**  
 17 **outputs were -- were correct.**  
 18 Q. So as a hydrologist, your job was also to  
 19 analyze models that were presented to the  
 20 District?  
 21 **A. Yeah, absolutely, especially related to their**  
 22 **inputs and outputs of those models.**  
 23 Q. As a hydrologist, did you have any reason to  
 24 look at regulations?  
 25 **A. Absolutely, those are something that we would**

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1 **use on a day-to-day basis or multiple times in a**  
 2 **day when reviewing applications, water permit**  
 3 **applications. Or I didn't really talk about it,**  
 4 **but we also administered abandoned well**  
 5 **programs, make sure the wells are plugged**  
 6 **properly; we have our own rules and regulations**  
 7 **through KDHE for those. We have our own rules**  
 8 **through the Kansas Corporation Commission for**  
 9 **cathodic bore holes, so we -- we use and**  
 10 **interpret those regulations, myself, all the**  
 11 **time, and did at that time also.**  
 12 Q. So those statutes and regulations, you would --  
 13 you would have to interpret them and apply them  
 14 in your daily job?  
 15 **A. Yes, absolutely.**  
 16 Q. And as a hydrologist, would you have also, at  
 17 least in part, received some training from Mike  
 18 Dealy or Don Koci as you were transitioning into  
 19 that role?  
 20 **A. Yeah, more from -- more from Mr. Dealy 'cause**  
 21 **Mr. Koci had already left the District.**  
 22 Q. What was Mr. -- Mr. Dealy's education?  
 23 **A. I believe he had a degree in geology. I don't**  
 24 **know if he had any advanced degrees, if he had a**  
 25 **master's or not, I cannot remember, but he was a**

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1 **licensed geologist.**  
 2 Q. Did he work for a different Groundwater  
 3 Management District before joining the Equus  
 4 Beds?  
 5 **A. He did, he was, I believe, the assistant manager**  
 6 **of the Southwest Kansas Groundwater Management**  
 7 **District No. 3. And I don't know for how long,**  
 8 **but prior to coming to the District in 1984, he**  
 9 **would have been employed by GMD3 in Garden City.**  
 10 Q. After your time as a hydrologist in 2007, did  
 11 your role change?  
 12 **A. It did, I became the District manager in**  
 13 **November of 2007, which I've served until**  
 14 **present time.**  
 15 Q. As a manager, have you engaged in work in  
 16 groundwater modeling?  
 17 **A. Yes.**  
 18 Q. Just in a nutshell, explain what some of that  
 19 work is.  
 20 **A. I think that would be very similar to what was**  
 21 **done as the hydrologist, whether it's doing**  
 22 **drawdown simulations, maybe doing more**  
 23 **complicated with the WinFlow, which by the way**  
 24 **we don't use any longer but we did have that**  
 25 **software for a while. And as -- also as a**

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1 **manager reviewing my hydrogeologist, which we**  
 2 **changed the title so I don't want to confuse**  
 3 **people. The hydrologist position is now called**  
 4 **the hydrogeologist position. Reviewing the**  
 5 **hydrogeologist's work on modeling, we have GMS**  
 6 **software, which was the interface for MODFLOW,**  
 7 **so I would review the hydrogeologist's work in**  
 8 **that regard.**  
 9 Q. Would you also look at water quality data as a  
 10 manager?  
 11 **A. Absolutely.**  
 12 Q. Is that a common part of your job?  
 13 **A. It is.**  
 14 Q. Would you also say that looking at models  
 15 proposed by outside entities would be a common  
 16 part of your job?  
 17 **A. Yeah, I don't know if I'd call it common, it --**  
 18 **it does happen. I mean, it's not -- it's not a**  
 19 **daily exercise, but we will look at them and I**  
 20 **will look at them as they become -- as they come**  
 21 **into the office for -- generally for water**  
 22 **permit application related activities.**  
 23 Q. So although it may not be daily, is that  
 24 something -- you've looked at a number of  
 25 different models as your time as a manager?

1 **A. I have -- I have looked at some, yes,**  
2 **absolutely.**  
3 Q. As a manager, have you also -- you mentioned  
4 some modeling you did as a hydrologist. As a  
5 manager, have you also engaged in similar forms  
6 of modeling or other forms of modeling?  
7 **A. Yes, particularly assistant -- assisting our**  
8 **hydrogeologist.**  
9 Q. And I think it was mentioned earlier that one of  
10 the hydrogeologists that you had was  
11 Mr. Clement, who has been in this room for  
12 sometime; is that right?  
13 **A. That is correct, he served as a District**  
14 **hydro -- I think we still called it hydrologist**  
15 **at that time, for a couple of years.**  
16 Q. And more recently there was another  
17 hydrogeologist that was employed by the  
18 District; is that right?  
19 **A. Yeah, we've had -- we've had a couple since**  
20 **then, but the most recent one was Steve**  
21 **Flaherty.**  
22 Q. And so as part of your role, would it have  
23 been your job to work closely with these  
24 hydro -- hydrogeologists as they analyzed models  
25 and data in that regard?

1 would you oftentimes -- oftentimes reference  
2 statutes or regulations?  
3 **A. Yes, most times.**  
4 Q. Okay. And in other words, some sort of issue  
5 would become -- come before the District, and  
6 you would analyze the statutes and regulations  
7 and then make a recommendation to the District  
8 Board?  
9 **A. That is correct.**  
10 Q. Okay. And so -- and, of course, I've been at  
11 the board meetings, you would have these  
12 PowerPoint presentations and you would  
13 essentially have the rules and regulations and  
14 how they applied in those PowerPoints. Is that  
15 a true statement?  
16 **A. Absolutely.**  
17 Q. Okay. And I think many in this room have been  
18 to these board meetings and have seen your  
19 presentations in that regard; is that true?  
20 **A. I would say there have been -- some of the**  
21 **people in this audience have definitely been**  
22 **there.**  
23 Q. When you would apply these statutes and  
24 regulations in your PowerPoint presentations to  
25 these interesting or unique issues that would

1 **A. Yes.**  
2 Q. So would you have worked with them to help to  
3 analyze models?  
4 **A. Yes.**  
5 Q. As the manager, would you give presentations to  
6 the District Board on occasion?  
7 **A. Yes, quite regularly.**  
8 Q. Tell me the nature of the presentations that you  
9 would give to the Equus Beds District Board.  
10 **A. Well, again, they could be related to water**  
11 **permit applications, whether that was something**  
12 **the Board needed to review 'cause the applicant**  
13 **was requesting an exemption or an exception to**  
14 **our regulations, or if the applicant had filed**  
15 **an application, let's say, in the Burrton**  
16 **Intensive Groundwater Use Control Area, that has**  
17 **to go in front of the Board.**  
18 I'd also present in front of the Board  
19 regarding budgets, budget needs, proposed rules  
20 and regulations that I felt the District needed  
21 to explore and draft those rules and regulations  
22 to present to the Board. Pretty much anything  
23 to do with the District, running the District  
24 could result in a presentation to my board.  
25 Q. When you would make those Board presentations,

1 come before the District, generally speaking,  
2 did you call Mr. Adrian, your counsel, to ask  
3 him how to interpret a regulation or a statute  
4 before you would present to the Board?  
5 **A. I would say -- I would say never, but I may have**  
6 **called him once or twice, so I'll say very, very**  
7 **rarely.**  
8 Q. So most of the time, you would look at these  
9 statutes and regulations yourself, draw a  
10 reasonable conclusion from them, and then  
11 present to the Board. Is that a true statement?  
12 **A. That is correct.**  
13 Q. Now, aside from these board meetings, which I  
14 understand to only occur once a month, would you  
15 have the occasion to review and apply statutes  
16 and regulations in your daily job description?  
17 **A. Yes, every -- every water permit application**  
18 **that we review has, for sure, our District**  
19 **specific regulations applied to.**  
20 Q. There's been a number of statutes and  
21 regulations that have been discussed previously  
22 in this hearing. Are those all statutes and  
23 regulations you're familiar with?  
24 **A. I would say I'm -- I can't think of one that I**  
25 **wasn't that we've discussed, so I would say**



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1 **yes --**  
 2 Q. Okay.  
 3 **A. -- I'm familiar with them.**  
 4 Q. Would you describe yourself as very familiar  
 5 with those statutes and regulations?  
 6 **A. I would.**  
 7 Q. I think you already indicated this, you have --  
 8 you have experience in helping to develop  
 9 regulations; is that -- is that true?  
 10 **A. Yes, that's one of my roles as District manager**  
 11 **is to draft rules and regulations that I -- I**  
 12 **see that the Board needs to consider, and at**  
 13 **their direction, I would draft those rules and**  
 14 **regulations for their either approval or**  
 15 **modification.**  
 16 Q. Have you even had the occasion to testify before  
 17 the legislature regarding these rule changes?  
 18 **A. Yes.**  
 19 Q. And is the reason that you were asked to testify  
 20 because you are perceived as an expert on how  
 21 these regulations would impact the Equus Beds  
 22 Aquifer?  
 23 **MR. MCLEOD:** I'm going to object to  
 24 that question because that would inquire  
 25 into the state of mind of the legislators

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1 making the request, which the witness is  
 2 not competent to speak to.  
 3 **MR. STUCKY:** I'll rephrase.  
 4 **PRESIDING OFFICER:** Thank you.  
 5 **BY MR. STUCKY:**  
 6 Q. Mr. Boese, why do you believe the District Board  
 7 asked you to testify before the legislature on  
 8 these regulations and rule changes?  
 9 **A. Well, as District manager, that would -- I would**  
 10 **be the expert in that rule and regulation and**  
 11 **why the District is proposing that rule and**  
 12 **regulation. And I -- I might comment also that**  
 13 **when a rule and regulation is being proposed and**  
 14 **it works through the process at the state level,**  
 15 **there is a legislative hearing on those, and**  
 16 **it's called the Rules and Regs Committee, so not**  
 17 **necessarily required to be there but that's**  
 18 **why -- in answer maybe to Mr. McLeod's question,**  
 19 **that's why I would go testify because they do**  
 20 **have a rule and reg, a legislative hearing, so**  
 21 **obviously if it's a District rule and**  
 22 **regulation, we would go answer any questions**  
 23 **they may have and present on that -- that rule**  
 24 **and regulation.**  
 25 Q. You indicated that you've reviewed permits and

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1 applications in your time employed by the  
 2 District; is that -- is that true?  
 3 **A. That is correct.**  
 4 Q. And as you look at permits and applications,  
 5 each time you cross-reference statutes or  
 6 regulations that apply, is that what your  
 7 testimony was?  
 8 **A. Absolutely, we -- myself and that's how I**  
 9 **instruct my staff is we go through an extensive**  
 10 **review of every application with a checklist,**  
 11 **does it or does not meet any applicable**  
 12 **regulation that -- that's being considered with**  
 13 **that application.**  
 14 Q. How many permits and applications do you think  
 15 you've reviewed, and I don't need an exact  
 16 number but in the hundreds, in the thousands,  
 17 during your time employed with the District?  
 18 **A. It's for sure in the hundreds, and it very**  
 19 **likely approaches a thousand or more.**  
 20 Q. So would it also suffice to say that at a bare  
 21 minimum you've looked -- you've looked at the  
 22 relevant statutes and regulations at least a  
 23 thousand or more times?  
 24 **A. I think that would be a fairly -- fair**  
 25 **statement; I don't have an exact count but every**

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1 **application. I should mention when -- we also**  
 2 **assist the public, the District members in**  
 3 **filing applications. So when we're assisting in**  
 4 **filing those applications, we would be using the**  
 5 **rules and regulations at that time to ensure**  
 6 **that what they're proposing would meet the rules**  
 7 **and regulations. So on one hand, we review the**  
 8 **applications, but we also assist with the**  
 9 **applications many times so it ends up being**  
 10 **almost a twofold process.**  
 11 Q. Would you then make a recommendation for  
 12 approval or denial of an application or permit  
 13 to the GMD Board?  
 14 **A. Generally, the -- the first recommendation goes**  
 15 **to the Division of Water Resources. So on a**  
 16 **staff level, according to our application**  
 17 **processing regulation, we have a specific**  
 18 **regulation, we -- the Division of Water**  
 19 **Resources sent us that application -- I should**  
 20 **back up. When we're talking about water permit**  
 21 **applications, it could be a new application or a**  
 22 **change application. We review that on a staff**  
 23 **level first. So my hydrogeologist or myself,**  
 24 **actually ends up being both if I have a**  
 25 **hydrogeologist, we do a dual review, review it ,**

1 if it meets our regulations, then that is the  
 2 recommendation for approval to Division of Water  
 3 Resources. We may add specific conditions that  
 4 we feel necessary for that application.  
 5 If that application does not meet any of  
 6 our rules and regulations, it's a  
 7 black-and-white review, then we recommend that  
 8 for denial. They can then appeal to the  
 9 District Board of Directors asking for an  
 10 exception to that particular rule and regulation  
 11 that wasn't met. At that time, then we would  
 12 make a recommendation to our -- I would make  
 13 that recommendation to our -- to our Board,  
 14 should that exception be granted or not, should  
 15 that application be approved or not; then that  
 16 would go to the Division of Water Resources.  
 17 Q. As part of your recommendations on approval on  
 18 permits, does it involve recommending special  
 19 conditions to protect the aquifer and senior  
 20 domestic and non-domestic water users?  
 21 A. It certainly can and it does sometimes.  
 22 Q. So, for example, in this case, there's been talk  
 23 about conditions that may be attached to the  
 24 approval of the City's proposal. Would some of  
 25 those conditions that you've highlighted in the

1 past to the Board, would those be similar kinds  
 2 of conditions, is that what we're talking about?  
 3 A. Yes, I -- I believe so. And as a matter of  
 4 fact, the 30 ASR Phase II applications that --  
 5 that are the subject of this proposal had  
 6 specific condition recommendations from the GMD,  
 7 from the District, attached to our  
 8 recommendation of approval on them.  
 9 Q. Most of the time, has the District Board  
 10 approved the recommendations, the staff  
 11 recommendation you give to them?  
 12 A. Yes, most -- most times. They may request a  
 13 modification. I would say almost all, all the  
 14 time they've gone with the staff recommendation,  
 15 my recommendation.  
 16 Q. How about the Division of Water Resources, does  
 17 the Division of Water Resources generally  
 18 approve of your recommendation or agree with  
 19 your recommendation?  
 20 A. Again, I would say almost always. I can think  
 21 of one or two instances that they did not  
 22 necessarily agree with our recommendation, and  
 23 perhaps that was modified after discussion with  
 24 the Division of Water Resources. But I can't  
 25 put a number to it but well over 99 percent of

1 the time, yes.  
 2 Q. So in that sense, at least, the Division of  
 3 Water Resources, at least, affords some weight  
 4 or some deference to your opinions in that  
 5 regard; is that true?  
 6 A. Yes, I believe so.  
 7 Q. Do you believe that part of the reason why your  
 8 opinion carries some weight is not only based on  
 9 your 28 years of experience with the Groundwater  
 10 Management District but also based on the fact  
 11 that as the manager of the District, you  
 12 understand this aquifer on a local level?  
 13 A. I -- I do believe that is true, I mean, that's  
 14 why the districts were formed was for that  
 15 local -- local input.  
 16 Q. Tell me about calculations with respect to safe  
 17 yield, is there any kind of special  
 18 consideration given to a groundwater management  
 19 district with respect to safe yield  
 20 calculations?  
 21 A. I'll speak for the Groundwater Management  
 22 District No. 2 that I'm employed with, I won't  
 23 speak to the other ones 'cause I don't know the  
 24 exact specifics, but we do have a special  
 25 regulation, it's K.A.R. 5-22-7, which is through

1 the Division of Water Resources, it is specific  
 2 to the Groundwater Management District No. 2.  
 3 Q. And so in other words, if there's a safe yield  
 4 calculation that needs to be made in a District,  
 5 in GMD2 - again, when I say the District, GMD2 -  
 6 is it the Division of Water Resources that would  
 7 do that safe yield calculation, or is it the GMD  
 8 Groundwater 2 District that does the  
 9 calculation?  
 10 A. It is the District, it is part of our  
 11 application review process.  
 12 Q. So in other words, the Division of Water  
 13 Resources relies on your calculation with  
 14 respect to safe yield; is that true?  
 15 A. That is correct.  
 16 Q. And I think that this goes hand in glove  
 17 together, but would the Division of Water  
 18 Resources then also defer to your recommendation  
 19 as far as what is exempt from safe yield then?  
 20 A. Yes, we would make a recommendation -- well, let  
 21 me back up. There are exemptions built into the  
 22 K.A.R. 5-22-7, the safe yield regulation, so if  
 23 it meets that exemption, then that's how we  
 24 would -- we would make that recommendation to  
 25 the Division of Water Resources that the

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1 application be approved because it meets that  
 2 exemption. If an applicant is requesting an  
 3 exception that's not specifically spelled out in  
 4 that regulation, that would go to the District  
 5 Board; they could then make that recommendation  
 6 or not to the Division of Water Resources.  
 7 Q. Regarding your calculations with respect to safe  
 8 yield or also whether or not your opinion with  
 9 regard to whether an exemption applies, has the  
 10 Division of Water Resources generally gone with  
 11 your recommendations or accepted your  
 12 calculations?  
 13 A. Yes, I can't -- I can't think off the top of my  
 14 head a time that they didn't.  
 15 Q. Now, you indicated that you've been employed by  
 16 the District for 28 years; is that right?  
 17 A. Looks like a little over now, yes, a little over  
 18 28 years.  
 19 Q. And when did this ASR project first start, ASR  
 20 Phase I, when did -- when did those discussions  
 21 first start?  
 22 A. I don't know if I can put an exact date on it,  
 23 but it was, I would say, shortly after I started  
 24 with the District in 1992, the District, along  
 25 with the City of Wichita, and probably more

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1 likely the City of Wichita's consultants began  
 2 exploring the idea of bank storage. That's the  
 3 water that's trapped or stored in the bank of a  
 4 river that's connected to the aquifer. In this  
 5 case, we're talking about the Little Arkansas  
 6 River. I -- I think those discussions generally  
 7 started because we were taking water level  
 8 measurements, and if memory serves me right, it  
 9 might have been 1992 or 1993 -- '93 following a  
 10 very high flow event in the Little Arkansas.  
 11 And obviously we knew the river and the aquifer  
 12 were connected, but we saw some very rapid  
 13 increases in the groundwater level immediately  
 14 adjacent to the river; we have a number of  
 15 monitoring wells that are very close to the  
 16 Little Arkansas.  
 17 I believe that's where that discussion  
 18 started of bank storage, can someone capture  
 19 that high flow and it ends up stored in the bank  
 20 of the Little Arkansas River and recharge it. I  
 21 would say those discussions probably started in  
 22 1992 or '93, if I remember correctly.  
 23 Q. So would it suffice to say that you've been  
 24 involved in ASR Phase I, ASR Phase II, and now  
 25 this aquifer maintenance credit proposal in some

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1 capacity since the inception of ASR?  
 2 A. I believe that's correct, unless there were  
 3 discussions prior to my -- my starting in  
 4 January of 1992. But I'm unaware of any  
 5 discussions prior to that, so I would say that's  
 6 a true statement, I've been involved since the  
 7 beginning.  
 8 Q. Mr. Boese, you have had the -- the opportunity  
 9 to give presentations with respect to water law  
 10 and water regulations in the past, have you not?  
 11 A. I have.  
 12 Q. Have you even been asked to give a presentation  
 13 with respect to water law and water regulations  
 14 for CLE training of lawyers?  
 15 A. Yes.  
 16 Q. Tell me just one of the examples of when you  
 17 were asked to highlight for continuing legal  
 18 education credits for lawyers the nuances of  
 19 groundwater law.  
 20 A. The one that comes to mind, and I don't  
 21 remember -- I don't remember when it was, a few  
 22 years back, was what's called a HalfMoon  
 23 seminar. I think that's sort of a national  
 24 organization of training and providing  
 25 continuing education credits for -- for, I

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1 think, attorneys and also, I believe,  
 2 engineering consultants. Gave a presentation,  
 3 basically sort of a water right 101, I guess you  
 4 would call it, on water rights, how -- how  
 5 they're applied, what they mean. It was a  
 6 pretty long presentation, maybe a couple of  
 7 hours, to a fairly large group of attorneys and  
 8 consultants.  
 9 Q. And so would you agree with me that your  
 10 two-hour presentation as you presented on water  
 11 law and water rights and these statutes and  
 12 regulations that are germane -- germane to the  
 13 issues before us today, would you agree with me  
 14 that there were numerous attorneys in the room  
 15 listening?  
 16 A. Yes.  
 17 Q. And would you also agree that this seminar was,  
 18 in fact, approved for CLE credits for these  
 19 attorneys?  
 20 A. That was my understanding, I received a nice  
 21 thank you from the HalfMoon seminar folks  
 22 thanking me for my presentation, that it was  
 23 well received, so I'm assuming so.  
 24 MR. MCLEOD: And I think we need  
 25 foundation on that if that's going to be

1 something that should be established of  
2 record, whether that was approved for CLE  
3 credit.

4 **MR. STUCKY:** I can easily establish  
5 that if we need to. I have it -- I have it  
6 in my CLE credits, so I can dig that up if  
7 we need to actually establish that.

8 **PRESIDING OFFICER:** Perhaps we could  
9 come back to that tomorrow.

10 **MR. STUCKY:** Okay. I can dig it up,  
11 or Tom can.

12 **BY MR. STUCKY:**

13 Q. Have you also given presentations on water  
14 rights and water law to the Governor's Water  
15 Conference?

16 **A. Yeah, I spoke a couple times at the Governor's**  
17 **Conference, including last year and I believe**  
18 **the year before, on a number of topics. I think**  
19 **last year's was an overview of the District and**  
20 **also, ironically, about this ASR proposal was**  
21 **one of the topics I discussed quite a bit about.**  
22 **I believe the year before that was about**  
23 **chloride contamination in the aquifer,**  
24 **particularly the Burrton -- the Burrton chloride**  
25 **contamination. So I have spoken, I believe,**

1 reports that helped to formulate your opinions  
2 in that regard?

3 **A. Yes.**

4 Q. And would you also have referenced some of the  
5 water quality calculations or measurements that  
6 you would have conducted as you were employed  
7 with the District?

8 **A. Yes, I believe -- I believe in my presentation I**  
9 **had some specific water quality hydrographs for**  
10 **the Burrton area, if I am remembering correctly,**  
11 **so yes.**

12 Q. Have you ever presented at any KDHE conferences?

13 **A. I have.**

14 Q. Tell me about the nature of some of those  
15 presentations.

16 **A. The -- the most recent one that I can remember**  
17 **was a conference that's put on mostly for the**  
18 **water well drillers in the state, and I was**  
19 **asked by Pam Chaffee, which works for Kansas**  
20 **Department of Health and Environment, she's in**  
21 **their water -- water well program, so she deals**  
22 **with abandoned wells and well construction, she**  
23 **asked me to present on GMD2 specific rules and**  
24 **regulations for proper abandoning and plugging**  
25 **of a well.**

1 **twice; there might have been another time in the**  
2 **Governor's Conference, but I know of at least**  
3 **twice.**

4 Q. I think everyone -- most people in this room are  
5 familiar with what the Governor's Conference is,  
6 so I don't know that we need lots of  
7 explanation, but would you agree it's a  
8 conference put on by the governor of the State  
9 of Kansas to bring some of the best minds on  
10 water law and water rights to the table to  
11 discuss these issues?

12 **A. Yeah, it's a -- it's a two-day conference that**  
13 **brings upwards of 6 or 700 people to the**  
14 **conference for a variety of topics from legal to**  
15 **technical to informational, so it's a -- it's a**  
16 **multifaceted conference.**

17 Q. Have you ever presented at this conference on  
18 the topic of chloride contamination and  
19 migration of the Burrton chloride plume?

20 **A. Yeah, I believe that was the 2018, the two years**  
21 **ago Governor's Conference, we -- I gave a**  
22 **presentation on contamination sites in the**  
23 **District, including the Burrton -- Burrton area.**

24 Q. So when you gave this presentation, would you  
25 have referenced specific studies or specific

1 **And I think I also spoke at a conservation**  
2 **district association that was put on by KDHE on**  
3 **a similar topic on proper plugging abandoning --**  
4 **of an abandoned well and also how to convert a**  
5 **well to an inactive status and what steps are**  
6 **needed on that.**

7 Q. So I assume given that it was KDHE, you would  
8 have talked about water quality in these  
9 presentations?

10 **A. Certainly about protecting water quality by**  
11 **properly plugging an abandoned well and -- and**  
12 **the associated rules and regulations on how to**  
13 **properly plug those wells.**

14 Q. Have you ever given any presentations at Kansas  
15 Water Authority meetings?

16 **A. I have.**

17 Q. Tell me a little bit about what Kansas Water  
18 Authority is and the nature of those  
19 presentations.

20 **A. Well, the Kansas Water Authority is the advisory**  
21 **organization to the Kansas Water Office, and our**  
22 **hearing officer happens to be the current chair**  
23 **of the Water Authority, I'll just mention that,**  
24 **so I have spoke to the Water Authority; they**  
25 **meet regularly, and, again, they're an advisory**

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1 to the Kansas Water Office.  
 2 My presentations, then, would have been, I  
 3 believe, an overview of the District, I spoke to  
 4 them about when we were attempting to raise the  
 5 assessment cap for the groundwater management  
 6 districts. And I presented some other topics to  
 7 them; I think ASR probably was one of those  
 8 topics, along with chloride contamination.  
 9 Q. What is the Equus-Walnut RAC?  
 10 A. That's a regional advisory committee, those were  
 11 established a few years ago, they -- they sort  
 12 of replaced what used to be known as the basin  
 13 advisory committees, so there's a number of  
 14 these throughout the state. And the local one  
 15 is called the Equus-Walnut. It's a combination  
 16 of the Equus Beds area and the Walnut -- Walnut  
 17 Creek area, so it kind of has a multi --  
 18 multifaceted groundwater and surface water  
 19 group, it's a little complex, but they are an  
 20 advisory, then, to the Water Authority.  
 21 Q. Have you had the opportunity to present on  
 22 similar topics to what we've already discussed  
 23 at those meetings as well?  
 24 A. Yes, multiple times.  
 25 Q. And just to back up a little bit, as you

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1 presented to the Equus-Walnut RAC or the Kansas  
 2 Water Authority or KDHE or HalfMoon, did you  
 3 volunteer to present, or were you asked by these  
 4 organizations to present?  
 5 A. I was asked.  
 6 Q. Have you had occasion to give presentations to  
 7 legislative committees, for example?  
 8 A. Yes.  
 9 Q. And so in other words, we could go on and on  
 10 through the different committees or entities  
 11 that have asked you to present, but would it  
 12 just suffice to say that you have given --  
 13 you've been asked a lot by outside entities that  
 14 deal with water law and water rights and you've  
 15 been asked a lot to present, would that be a  
 16 true statement?  
 17 A. That's true. And we really didn't touch base  
 18 but also spoke a number of times to different  
 19 organizations, civic organizations, Lions Club,  
 20 rotary clubs, Farm Bureaus, KLA, the Kansas  
 21 Livestock Association, I've spoke and presented  
 22 many times.  
 23 Q. Have you ever reviewed or assisted or  
 24 collaborated on KGS or USGS studies or reports?  
 25 A. Yes.

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1 Q. I'd ask that you turn in your exhibit notebook  
 2 to Exhibit 61. I believe it's in Volume IV.  
 3 **PRESIDING OFFICER:** And, Mr. Stucky,  
 4 Mr. Boese -- for the record, Mr. Boese made  
 5 reference to making presentations on the  
 6 ASR to the Kansas Water Authority. That  
 7 has not occurred during the time that I  
 8 have been on the Kansas Water Authority nor  
 9 served as its chair. So I wanted to  
 10 clarify that. Do you agree with that,  
 11 Mr. Boese?  
 12 A. Yeah. I'd also agree that I believe I saw you  
 13 leave the room at the Governor's Conference when  
 14 I -- when I began presenting also.  
 15 **PRESIDING OFFICER:** And I did not  
 16 return until you were finished. Thank you,  
 17 please go ahead.  
 18 **BY MR. STUCKY:**  
 19 Q. With that clarification for the record, do you  
 20 recognize Exhibit 61?  
 21 A. I do.  
 22 Q. What is Exhibit 61?  
 23 A. That's a, I guess, a string of emails, both  
 24 between myself and Walter Aucott, which works  
 25 for the -- used to work for the USGS. It's

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1 several emails, but essentially the USGS was  
 2 beginning their work on the groundwater flow  
 3 model, and I think they started that maybe in  
 4 2009, and they were inviting me to participate  
 5 in their meetings and discussions on that  
 6 groundwater model.  
 7 Q. When you say groundwater flow model, how was  
 8 that related to the proposal here today before  
 9 us?  
 10 A. Well, I believe that's the groundwater flow  
 11 model that was used in the City's proposal.  
 12 Q. So in other words, you were asked to help be  
 13 involved in developing this particular model, at  
 14 least, in some role?  
 15 A. Yeah, to provide input on aquifer parameters and  
 16 data, what have you related to that, yes.  
 17 **MR. STUCKY:** I move to admit the  
 18 District 61.  
 19 **PRESIDING OFFICER:** Any objections?  
 20 Hearing none, GMD 61 will be admitted.  
 21 **BY MR. STUCKY:**  
 22 Q. Mr. Boese, I'd ask that you now turn to  
 23 Exhibit 62.  
 24 A. Okay, I'm there.  
 25 Q. What is Exhibit 62?

1 **A. That is a letter, let me see who signed it, from**  
2 **Cristi Hansen, who is a hydrologist, I think she**  
3 **may be retired now, with the USGS. It's dated**  
4 **May 9th, 2012. This was a response letter to my**  
5 **review or my District's review, which would have**  
6 **been mostly myself, review of a report that**  
7 **Cristi had generated called U.S. Geological**  
8 **Survey Scientific Investigation Map, Status of**  
9 **Groundwater Levels and Storage Volume in the**  
10 **Equus Beds Aquifer near Wichita, Kansas**  
11 **July 2011.**

12 **So I had -- she had asked me for a**  
13 **technical review or sort of a peer review of**  
14 **that -- of her report, and I responded with, it**  
15 **looks like, at least 12 areas that I identified**  
16 **that I had questions about, might need some**  
17 **improvement, you know, might want to change this**  
18 **to this, just verifying data. And she responded**  
19 **with a thank you letter saying she'd consider**  
20 **those, she changed where she felt necessary, and**  
21 **provided a response to my review.**

22 Q. And just to back up for the record, on  
23 Exhibit 61, the model that you were working with  
24 USGS to review, that was the MODFLOW model  
25 that's been utilized by the City; is that right?

1 be the author indicated.  
2 **MR. STUCKY:** And I'm not moving to  
3 admit it for the -- I'm not using it for  
4 the truth of the matter asserted. I'm  
5 using it to indicate that these suggestions  
6 were made to -- to suggest or demonstrate  
7 that Mr. Boese actually worked with the  
8 USGS. I'm not concerned with a record of  
9 what it was that they were discussing; I  
10 just am admitting it for that purpose to  
11 show that he worked with the USGS, so I  
12 think it gets around any kind of hearsay  
13 objection, that's my number one response.  
14 And number two response is I think there  
15 was lots of leeway with the exhibits that  
16 Mr. McLeod was allowed to admit. In fact,  
17 there are several reports from USGS and  
18 otherwise, and so I would say that since  
19 this is signed by someone that works for  
20 USGS, Cristi Hansen, as the hydrologist, to  
21 the extent that we were -- Mr. McLeod was  
22 allowed to admit exhibits that were signed  
23 by members of USGS as an official  
24 government document, this also should be  
25 admitted under that exception so ...

1 Because there's several models that have been  
2 mentioned?

3 **A. Yes, yes, yes.**

4 Q. But moving back to Exhibit 62, so this is a  
5 situation where USGS asked you to do a peer  
6 review, you identified a number of concerns with  
7 the work they had done, and did they generally  
8 incorporate your concerns?

9 **A. I believe they incorporated some, some were --**  
10 **just required some further explanation of why**  
11 **they used particular data. So some -- some were**  
12 **corrected, some were an explanation by**  
13 **Ms. Hansen in that regard. So, again, this was**  
14 **a fairly common practice for the USGS or KGS**  
15 **would send reviews or draft reports to the**  
16 **District office, and we would review them and**  
17 **send back any comments. So this is an example**  
18 **of that response back from them.**

19 **MR. STUCKY:** I move to admit  
20 Exhibit 62.

21 **PRESIDING OFFICER:** Yes, sir.

22 **MR. MCLEOD:** I don't think there's  
23 foundation, I don't think the witness wrote  
24 this letter. I think the person to  
25 establish foundation for this letter would

1 **MR. MCLEOD:** I think there is a vast  
2 difference between official published  
3 reports of the USGS and a letter, but the  
4 foundational issue is we don't even know  
5 that this is what it purports to be. It's  
6 not a hearsay issue alone; it's that we  
7 don't know that this document is what it  
8 purports to be. Its authenticity is at  
9 issue.

10 **PRESIDING OFFICER:** So you cannot  
11 determine that this is a letter that shows  
12 that Mr. Boese was working with the USGS?

13 **MR. MCLEOD:** I can't without  
14 foundational testimony from the -- from the  
15 purported author saying that, indeed, this  
16 is a letter that she wrote.

17 **PRESIDING OFFICER:** I'm going to  
18 exercise my discretion because I can tell.  
19 We'll admit it.

20 **BY MR. STUCKY:**

21 Q. So would it suffice to say, Mr. Boese, without  
22 introducing more exhibits in this regard, that  
23 you have reviewed, assisted, or collaborated  
24 with both the KG -- KGS and the USGS on numerous  
25 studies, reports, and modeling?

1 **A. Yes, I think it's -- if you would look at many**  
 2 **of the USGS reports and KGS reports that were**  
 3 **published reports, you'll find acknowledgment in**  
 4 **the pages on those. And I can't say every one,**  
 5 **but most of them would acknowledge assistance by**  
 6 **either naming me personally or the Groundwater**  
 7 **Management District staff as assisting,**  
 8 **providing data or -- and/or technical review**  
 9 **of -- I think if you would look through any of**  
 10 **those USGS reports related to the Equus Beds,**  
 11 **you'll find that in almost all of them, an**  
 12 **acknowledgment that we assisted or myself**  
 13 **assisted personally.**  
 14 Q. Mr. Boese, you also have been asked to serve on  
 15 a number of boards germane to water rights or  
 16 water law. Is that a true statement?  
 17 **A. That's true.**  
 18 Q. I would ask that you turn now to Exhibit 63 in  
 19 that same notebook.  
 20 **A. Okay.**  
 21 Q. What is Exhibit 63?  
 22 **A. This is a letter dated April 23rd, 2010 from the**  
 23 **City of Wichita mayor at the time, Carl Brewer,**  
 24 **thanking me for agreeing to serve on what was**  
 25 **called the Water Utilities Advisory Task Force;**

1 with this particular letter?  
 2 **A. Yes.**  
 3 **MR. STUCKY:** I move to admit  
 4 Exhibit 63 into evidence.  
 5 **PRESIDING OFFICER:** Any objections?  
 6 GMD 63 will be admitted.  
 7 **BY MR. STUCKY:**  
 8 Q. Now, you said just a moment ago that I can't get  
 9 into the mind of Mayor Brewer as far as why I  
 10 was asked to serve on this task force, but  
 11 certainly we can look at parts of this letter.  
 12 Could you read for me the first sentence of that  
 13 second paragraph?  
 14 **A. You have been asked to serve on this task force**  
 15 **not only because of your technical expertise,**  
 16 **but also because of your leadership within the**  
 17 **community.**  
 18 Q. So let me stop you there. You were asked to  
 19 serve on this task force because of your, quote,  
 20 technical expertise, end quote. Is that a true  
 21 statement?  
 22 **A. Yes.**  
 23 Q. And so the mayor of the City of Wichita valued  
 24 your technical expertise on topics as they  
 25 related to the Equus Beds Aquifer and the ASR

1 **it was for the City of Wichita, that was a task**  
 2 **force that was formed that had a number of**  
 3 **individuals, and they asked myself to serve on**  
 4 **that task force to help provide recommendations**  
 5 **on the City's water supply, ASR, I think all the**  
 6 **way up to utility rates. And we met for a**  
 7 **number of years, I don't remember if it was one**  
 8 **or two years that we would meet regularly and --**  
 9 **as the City was going through sort of a review**  
 10 **of their water utilities program.**  
 11 Q. And part of the recommendations or advice you  
 12 were giving to the City concerned ASR. Is  
 13 that -- is that a true statement?  
 14 **A. That was a discussion topic of that task force,**  
 15 **and I can't get into Mr. -- Mr. -- or Mayor**  
 16 **Brewer's mind, but I'm guessing that was**  
 17 **probably a considerable consideration in why he**  
 18 **asked me to serve on that task force because of**  
 19 **my expertise of the Equus Beds Aquifer and the**  
 20 **recharge project, the ASR project.**  
 21 Q. Now, certainly, Mr. McLeod, as employed by the  
 22 City, could inquire if this is, in fact, Mayor  
 23 Brewer's signature, but is it your belief that  
 24 this letter was signed by Mayor Brewer and these  
 25 were the attachments that arrived to you with --

1 recharge project; is that true?  
 2 **A. I would say that's true.**  
 3 Q. Tell me, you might have answered this, and if  
 4 you have, I apologize, but in paragraph one,  
 5 it's also stated why this task force was formed,  
 6 could you read the last sentence of that first  
 7 paragraph?  
 8 **A. Specifically, the task force will be charged to**  
 9 **advise staff and the Wichita City Council on the**  
 10 **future rate structure, as well as the future**  
 11 **water supply for our community, including the**  
 12 **Aquifer Storage and Recovery, parentheses, ASR,**  
 13 **Project.**  
 14 Q. So we don't have to guess as to why your  
 15 technical expertise was valued, this prior  
 16 paragraph talks specifically about the ASR  
 17 project; is that true?  
 18 **A. That is true.**  
 19 Q. Through this task force, would you have given  
 20 recommendations to the City regarding their  
 21 permits and the nature of the regulations that  
 22 applied?  
 23 **A. Yeah, we -- we'd discuss a number of topics, and**  
 24 **of course, in that -- in that discussion**  
 25 **regulations and the ASR project obviously would**

1 have come up. And, for instance, if the task  
2 force was talking about, for instance, I believe  
3 on one occasion, talking about filing new water  
4 permits in the Equus Beds Aquifer, in the well  
5 field, and, of course, I was able to advise them  
6 that new water permits, other than recharge and  
7 recovery permits, would most likely not be --  
8 not be available due to our safe yield  
9 regulation because the area is  
10 over-appropriated. So I do remember having some  
11 of those discussions. So, absolutely, they  
12 would look to me for expertise of not only the  
13 Equus Beds Aquifer but the associated rules and  
14 regulations that were -- that govern us.  
15 Q. Was there ever a time, for example, where there  
16 was a discussion regarding, you know, say, a  
17 permit the City wanted to pursue and you were  
18 able to say, wait, wait, people in the room,  
19 there's a concern with a regulation, we may not  
20 be able to proceed with this plan as it's been  
21 discussed, did that ever happen?  
22 A. Yeah, I do remember that discussion about filing  
23 new water permits; I think there was even  
24 discussions about buying irrigation rights,  
25 which could be allowed but, you know, not quite

1 as simple as it sounds just to buy an irrigation  
2 right, you know, and just automatically start  
3 using it for municipal use. So those were --  
4 those were discussions that occurred that I was  
5 able to provide insight and guidance on to that  
6 task force.  
7 Q. So in other words, and if you -- if it helps,  
8 you can mention the name, but someone on the  
9 task force with the City of Wichita presented an  
10 idea, and then you were able to say, actually,  
11 we can't do that idea because this statute or  
12 regulation applies. Is that a characterization  
13 of what occurred?  
14 A. I don't remember exactly who started that  
15 discussion about buying -- buying irrigation  
16 water rights or filing new applications, whether  
17 it was someone on the task force, which may have  
18 been a non-City individual, or if it was a City  
19 individual that started that discussion. We had  
20 pretty open dialogue, so it was, I guess, sort  
21 of a free-for-all discussion sometimes where  
22 some people just have ideas and we would discuss  
23 them. Obviously being guided by the -- by the  
24 City, I mean, they would have an agenda for us  
25 to follow, but it was a very open brainstorming

1 session sometimes.  
2 Q. But would you -- do you think, though, that your  
3 recommendations with regard to statutes and  
4 regulations were taken to heart during these  
5 discussions?  
6 A. Yes.  
7 Q. Have you -- were you ever asked to serve on the  
8 City of Wichita ASR Project Executive Oversight  
9 Committee?  
10 A. I was.  
11 Q. What years were you asked to serve on the City  
12 of Wichita ASR Project Executive Oversight  
13 Committee?  
14 A. If my memory serves me right, which, again, I've  
15 been with the District for a long time, but I  
16 believe it was from about 2008 to 2011 when the  
17 Phase II was being conceived, permitted, bids  
18 being sent out. So I believe it was roughly  
19 about a three-year period between 2008 and 2011,  
20 if my memory serves me correctly.  
21 Q. In 20 seconds or less, what is the City of  
22 Wichita ASR Project Executive Oversight  
23 Committee?  
24 A. There was a handful of, I would say experts that  
25 would meet regularly to get an update on the

1 City's project, where they were at with regards  
2 to everything from permitting, to land  
3 acquisition, to funding, get an update and  
4 discuss and provide recommendations and insight  
5 on the next step forward.  
6 Q. Who would have asked you to serve on this  
7 committee?  
8 A. It would have been the City of Wichita; I don't  
9 remember if it was specifically director of the  
10 utilities at the time, David Warren, it may have  
11 been -- it may have been the city manager, I  
12 actually don't remember who asked me to serve on  
13 the committee, but it was a select few of a  
14 couple of City of Wichita personnel, a couple of  
15 consultants, myself, and then there was sort of  
16 an outside -- his name's failing me, but he was  
17 sort of a nationally known that worked for the,  
18 I believe the American Water Association. I  
19 don't remember his name but -- so it was a, I  
20 don't know, group of about six folks who would  
21 get together and get an update on the project  
22 and discuss where it was at and where it was  
23 heading.  
24 Q. How was this committee that you were asked to  
25 serve on by the City of Wichita different from



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1 the Wichita Water Utilities Advisors Board?  
 2 **A. Well, the Executive Oversight Committee was very**  
 3 **specific, just to discuss ASR Phase II, again,**  
 4 **the permitting, the development, land**  
 5 **acquisition, funding, so it was specific to**  
 6 **that -- that project.**  
 7 Q. During those discussions with this oversight  
 8 committee, would you have also discussed  
 9 statutes and regulations and impacts to water  
 10 quality in the aquifer, would those topics have  
 11 come up in those discussions?  
 12 **A. Yes.**  
 13 Q. Would you have given input in that regard?  
 14 **A. Yes.**  
 15 Q. So at least as of 12 years ago when you were  
 16 asked to serve on that particular committee, at  
 17 least someone in the City saw you as  
 18 knowledgeable or as a resource on those topics.  
 19 Is that a true statement?  
 20 **A. Yes.**  
 21 Q. Previously, when the City of Wichita experts  
 22 have been on the stand, this concept of peer  
 23 reviews has been mentioned. Do you recall some  
 24 of those questions?  
 25 **A. Yes.**

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1 Q. Do I need to rehearse for you what a -- what a  
 2 peer review is?  
 3 **A. No.**  
 4 Q. Okay. Have you had the occasion to conduct peer  
 5 reviews in the past?  
 6 **A. Yeah, I mean, there are different levels of peer**  
 7 **review. I mean, most of these we have done for**  
 8 **USGS would be considered a technical or peer**  
 9 **review, to look at the report, look at the data,**  
 10 **look at the conclusions, I would call those peer**  
 11 **reviews. Someone might call them technical**  
 12 **reviews. There's little difference in my mind**  
 13 **between the two.**  
 14 Q. So, for example, Exhibit 61 and 62, would you  
 15 consider your role in that regard a peer review,  
 16 or at least in part a peer review?  
 17 **A. 61 was the email from Mr. Aucott just asking me**  
 18 **to be involved with the -- I don't know if that**  
 19 **would have been a peer review because that was**  
 20 **during development of the model. 62 from -- the**  
 21 **letter back from Ms. Hansen would have been more**  
 22 **of a technical peer review type of review.**  
 23 Q. And are those isolated examples of when you've  
 24 been asked to peer review reports or -- or  
 25 modeling?

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1 **A. Well, I've been asked, or the District's been**  
 2 **asked dozens of times to review USGS and KGS**  
 3 **reports.**  
 4 Q. So in other words, those aren't isolated  
 5 examples, correct?  
 6 **A. No, no.**  
 7 Q. I would ask that you turn in your notebook to  
 8 Exhibit 42. And, I'm sorry, you're going to  
 9 have to switch notebooks, it looks like that is  
 10 Volume III. What is Exhibit 42 in -- in the  
 11 notebook before you?  
 12 **A. Can you give me one second, the notebook has**  
 13 **come apart at some point in time so I'm**  
 14 **reconstructing it really quick? All right, I'm**  
 15 **there, sorry.**  
 16 Q. In a nutshell, what is Exhibit 42?  
 17 **A. Exhibit 42 is a Kansas Geological Survey, KGS,**  
 18 **report that was done by Dr. Don Whittemore. He**  
 19 **was looking at the Burrton Intensive Groundwater**  
 20 **Use Control Area, specifically the -- the**  
 21 **chloride, the chloride plume, contamination**  
 22 **plume in the Burrton area, looking at the change**  
 23 **in salinity, the distribution of salinity, and**  
 24 **how that salinity has moved over time.**  
 25 Q. Now, this is certainly an official government

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1 document; is that -- is that true?  
 2 **A. Yes.**  
 3 **MR. STUCKY:** I would ask to move --  
 4 I'd move to admit the District's  
 5 Exhibit 42.  
 6 **PRESIDING OFFICER:** Any objections?  
 7 GMD 42 will be admitted.  
 8 **BY MR. STUCKY:**  
 9 Q. Now, under the acknowledgments of this report,  
 10 there's a reference to how much of this report  
 11 was extracted from a report from the Equus Beds  
 12 Groundwater Management District. Is that a true  
 13 statement?  
 14 **A. Yes.**  
 15 Q. Let me ask you this: Was a lot of that input  
 16 that was furnished by the GMD2 staff, was a lot  
 17 of that your input and work as it related to the  
 18 development of this report?  
 19 **A. Yes.**  
 20 Q. So in that sense, do you believe that you  
 21 collaborated with the USGS as they developed  
 22 this report on salinity and the migration of  
 23 chloride in the Equus Beds Aquifer?  
 24 **A. Yes, I assisted Dr. Whittemore in providing him**  
 25 **data and input in review of that original --**

1 that original report that District actually  
2 personally funded, and this was -- and this was  
3 an update that Dr. Whittemore did actually for  
4 the Kansas Department of Agriculture off of that  
5 original report.

6 Q. So I assume, then, since you helped to influence  
7 the writing of this report, you're very familiar  
8 with the report and its contents. Is that a  
9 true statement?

10 A. Yes, I haven't -- I haven't looked at it in the  
11 last month, but, yes, I'm familiar with it.

12 Q. I would ask that you now turn to Exhibit 44 in  
13 your notebook. Just to speed this up, is  
14 Exhibit 44 another USGS official report that was  
15 submitted by Klager, Kelly and Ziegler?

16 A. Yes.

17 Q. And, again, this is an official government  
18 document, is it not?

19 A. It is.

20 Q. And just in a nutshell, does this document talk  
21 about how the impacts of artificial recharge  
22 and -- and simulated well effects on chloride  
23 transport in the Equus Beds Aquifer?

24 A. Yeah, it -- it discusses not only effects of  
25 well pumping but also artificial recharge on the

1 A. I don't specifically remember exactly on this  
2 report, but, generally, the kind of assistance  
3 we provide is very similar for most of these  
4 reports; we're providing data, input, providing  
5 technical review if asked to do so, so I think  
6 that would be a generally true statement.

7 Q. So is this also a report that, at least, at some  
8 point you read and you're familiar with?

9 A. Yes.

10 Q. I would ask that you now turn to Exhibit 45 in  
11 that same notebook. What is Exhibit 45 just in  
12 a nutshell?

13 A. This is another USGS report, and it's titled  
14 Status of Groundwater Levels and Storage Volume  
15 in the Equus Beds Aquifer near Wichita, Kansas,  
16 January 2016. So, again, another report by USGS  
17 specific to the -- to the Wichita well field  
18 area, the basin storage area.

19 Q. And once again, this is a report that provides  
20 acknowledgements to GMD2, it's on the fifth page  
21 of this report as we count from the beginning of  
22 this exhibit, it's true that there is  
23 acknowledgment given to the District for the  
24 work and the collaboration in developing this  
25 report. Is that a true statement?

1 groundwater flow and the chloride movement in  
2 the -- in the well field area.

3 MR. STUCKY: I move to admit the  
4 District Exhibit 44 under the same basis  
5 that has often been used in this hearing as  
6 a government document.

7 PRESIDING OFFICER: Any objections?  
8 Hearing none, GMD Exhibit 44 is admitted.

9 BY MR. STUCKY:

10 Q. Now, Mr. Boese, without asking you to flip  
11 through this and go to the acknowledgment, would  
12 you agree with me that there is a reference in  
13 the acknowledgements of this report and that  
14 there was collaboration with the Equus Beds  
15 Groundwater Management District in the writing  
16 of this report?

17 A. I'm looking for the acknowledgment page, and I'm  
18 not seeing it off the top of my head, but I do  
19 recall providing some input into this report.

20 Q. So would your input have been similar to your  
21 input on the prior report, in other words, you  
22 would have furnished data, you would have helped  
23 to look at the modeling that was performed,  
24 would you have given all that same type of  
25 input?

1 A. Yes, in this specific report we provided --  
2 collecting and provided groundwater-level data  
3 that was used for the report.

4 Q. So once again, are you familiar with this  
5 report, and were you intimately involved in the  
6 development of this report?

7 A. I'm certainly familiar with it. Again, I've --  
8 I've looked at so many of these, it's hard for  
9 me to remember which one I reviewed and to what  
10 level. But this one we may have not did a  
11 technical review of because we're not in the  
12 acknowledgment, but I'm certainly familiar with  
13 the report and provided much of the data that  
14 was used in it.

15 MR. STUCKY: I move to admit the  
16 District Exhibit 46 -- or 45 under the same  
17 basis as before.

18 PRESIDING OFFICER: Any objections?  
19 Hearing none, GMD Exhibit 45 is admitted.

20 BY MR. STUCKY:

21 Q. Now could you turn to Exhibit 46?

22 A. Okay.

23 Q. What is Exhibit 46 in a nutshell?

24 A. This is, again, another USGS report, it's titled  
25 Simulation of Groundwater Flow, Effects of

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1 **Artificial Recharge, and Storage Volume Changes**  
 2 **in the Equus Beds Aquifer near the City of**  
 3 **Wichita, Kansas Well Field, 1935 to 2008. I**  
 4 **believe this is the -- the USGS report that**  
 5 **deals with the model that is subject to the**  
 6 **City's proposal; I believe this same report is**  
 7 **in the City of Wichita's exhibit notebook, if**  
 8 **I'm -- if I'm not mistaken.**  
 9 **MR. STUCKY:** Okay. I move to admit  
 10 Exhibit 46 under the same basis.  
 11 **PRESIDING OFFICER:** Any objections?  
 12 Hearing none, 46 is admitted.  
 13 **BY MR. STUCKY:**  
 14 Q. So once again I gather from the acknowledgments  
 15 of this report that this -- this would be  
 16 another example of a USGS report where you would  
 17 have been involved in helping to develop it and  
 18 provide data. Is that a true statement?  
 19 **A. Yes.**  
 20 Q. And when I say you, I mean you personally. And  
 21 I understand that there are other members of the  
 22 District that likely would have helped, but you  
 23 would have been the manager of the District when  
 24 this report came out, would you not have been?  
 25 **A. Yes.**

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1 Q. And so as the manager of the District, I assume  
 2 that you would have taken the lead in providing  
 3 the data or the input with respect to this  
 4 report. Is that a true statement?  
 5 **A. Yes.**  
 6 Q. So are these just -- and, again, I assume, so  
 7 you can testify to it later, this is another  
 8 report that you're familiar with; is that right?  
 9 **A. Yes.**  
 10 Q. What is a sustainability assessment as it was  
 11 referenced in one of these reports?  
 12 **A. I don't think we've admitted that one yet, Dave.**  
 13 **If you want to go back to the KGS, the Kansas**  
 14 **Geological Survey sustainability assessment, I**  
 15 **don't know that we've --**  
 16 Q. Could you turn to that exhibit?  
 17 **A. Yes. It's on page -- it's Exhibit 43.**  
 18 Q. Exhibit 43 is a sustainability assessment, then,  
 19 from -- with -- where KG -- where KGS was  
 20 involved; is that right?  
 21 **A. Yeah, the Kansas Geological Survey conducted**  
 22 **this at the request of the Groundwater**  
 23 **Management District; we -- we partially funded**  
 24 **that, along with the Kansas Water Office, I**  
 25 **believe, on this particular report. This was a**

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1 **sustainability assessment that the KGS did for**  
 2 **the District where they essentially looked at**  
 3 **what would be the acceptable pumping. They did**  
 4 **it in a couple of different ways, by District**  
 5 **wide, I believe, by county, down to the township**  
 6 **level, and then also in defined areas that --**  
 7 **that we provided, the District provided, looked**  
 8 **at what would be the sustainable pumping or**  
 9 **withdrawal from the aquifer that would not cause**  
 10 **a groundwater decline on an average annual**  
 11 **basis.**  
 12 Q. And along with Mr. Flaherty, were you involved  
 13 in providing input and information to KGS  
 14 regarding the development of this report?  
 15 **A. We were -- we were very involved with this**  
 16 **report because we were, well, not only helping**  
 17 **pay for it, but we were providing much of the**  
 18 **data to the Kansas Geological Survey and**  
 19 **reviewing it.**  
 20 Q. Were you personally involved in providing the  
 21 data and helping to develop this report?  
 22 **A. Yes, along with my hydrogeologist at the time,**  
 23 **Steve Flaherty.**  
 24 **MR. STUCKY:** I move to admit the  
 25 District's Exhibit 43.

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1 **PRESIDING OFFICER:** Any objections?  
 2 **MR. OLEEN:** No objection and I have  
 3 it flagged as it may have been admitted  
 4 before but that could be incorrect.  
 5 **A. It does have -- in my notebook, it does have an**  
 6 **exhibit tab on it. But I'm not sure.**  
 7 **PRESIDING OFFICER:** Okay. In the  
 8 event it may be a duplicate, but GMD  
 9 Exhibit 43 is admitted.  
 10 **BY MR. STUCKY:**  
 11 Q. Have you been involved with helping to review  
 12 work that's been performed by Burns & McDonnell  
 13 in the past?  
 14 **A. Yes.**  
 15 Q. Provide an exam -- just provide one example of  
 16 that.  
 17 **A. Well, besides the ASR project, I'll -- I'll**  
 18 **maybe provide a different one. The Board of**  
 19 **Public Utilities for McPherson, I'll just refer**  
 20 **to them as McPherson BPU, filed a series of**  
 21 **applications a few years ago for a new proposed**  
 22 **well field located south of the City of**  
 23 **McPherson a considerable distance, about, I**  
 24 **believe, 14 or 16 miles off the top of my head.**  
 25 **And part of that review required some**

1 modeling because it is in an area that has  
2 chloride contamination. So at the request of  
3 the District and working with the Board of  
4 Public Utilities, Burns & McDonnell did some  
5 modeling work to show and determine what those  
6 impacts of that new well field could have on  
7 that chloride movement and also the -- the  
8 sustainability of the aquifer at that location.

9 Q. So did Burns & McDonnell then ask you to  
10 essentially peer review some of their work in  
11 that regard?

12 A. Oh, we certainly reviewed it and were involved  
13 with -- with it during the process of developing  
14 that -- that model. We -- we requested  
15 additional monitoring wells be put in, which  
16 were put in so that could enhance that data  
17 collection and modeling, so, yeah, we were very  
18 involved in that.

19 Q. So did you give recommendations specifically to  
20 modelers that were employed by Burns &  
21 McDonnell?

22 A. Yes, between myself and my hydrogeologist, Steve  
23 Flaherty, we provided data and lots of  
24 recommendations related to that model.

25 Q. Okay. Who are some of the modelers involved on

1 there was hesitation to correct the model, but  
2 eventually that was done.

3 Q. Were there suggestions made by Mr. DeAngelis in  
4 how to correct the modeling, that you and  
5 Mr. Flaherty gave him additional input to  
6 correct his solutions and then to arrive at a  
7 final result?

8 A. Yeah, if I remember correctly, the -- because  
9 the groundwater flow direction was different, we  
10 believed different -- represented different than  
11 what was in the model, I think the --  
12 Mr. DeAngelis was -- idea was to basically just  
13 rotate the output, and we didn't think that was  
14 a proper way to do that.

15 Q. And as you explained it to him in greater  
16 detail, did he -- did he then agree with you as  
17 far as that not being a proper solution?

18 A. I -- I believe so. I'm trying to remember  
19 exactly what transpired there, but in the end,  
20 we were fairly confident that the model -- model  
21 was used properly.

22 Q. Certainly you have lots of experience with ASR  
23 Phase I, Phase II, and the AMC as it relates to  
24 recharge, but did this project also involve  
25 recharge rates?

1 this project?

2 A. I -- I'm trying to remember. I know Luca  
3 DeAngelis was one of the main modelers, I  
4 believe Mr. McCormick was involved, and  
5 Mr. Clement with Burns & McDonnell. I -- I  
6 can't say for what level they were involved, but  
7 I know Mr. DeAngelis was -- did quite a bit of  
8 it.

9 Q. Let's just mention Mr. DeAngelis. Can you give,  
10 like, an example of a suggestion that you would  
11 have made to Mr. DeAngelis as it related to this  
12 project and whether or not your recommendation  
13 was abided by Mr. DeAngelis, give an example.

14 A. Let's see. One instance I can -- I can think of  
15 is myself and Mr. Flaherty, my hydrogeologist,  
16 felt that there was some incorrect input into  
17 the model that would show in the groundwater  
18 flow direction at a different direction, that we  
19 believed there was a groundwater divide in the  
20 area and it wasn't accurately represented in the  
21 model. So we requested that that be modified in  
22 the model.

23 Q. And what was Mr. DeAngelis' immediate reaction  
24 or response to that suggestion?

25 A. Well, I think initially, I think there was --

1 A. Can you --

2 Q. The project with the McPherson Board of Public  
3 Utilities?

4 A. Oh, yeah, I mean, that was -- part of it was to  
5 look at -- the three permits that the Board of  
6 Public Utilities had applied for, I believe,  
7 were somewhere around 2900 acre-feet. Now,  
8 that's obviously a pretty large quantity of  
9 water that could be withdrawn from the aquifer,  
10 so part of that was not only looking at that  
11 chloride movement but would that be sustainable  
12 in that area. So certainly that had to be in  
13 the model, the recharge and the safe yield of  
14 that area.

15 Q. Ask that you turn back quickly to -- well, let  
16 me ask this: These -- these peer reviews and  
17 involvement you've had in looking at reports or  
18 modeling, this is not an exhaustive list that  
19 we've covered, is that a true statement, of the  
20 work you've performed as a District and as far  
21 as giving input on official government reports  
22 or modeling to Burns & Mac, what I've  
23 highlighted is not an exhaustive list; is that  
24 right?

25 A. That's correct.

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1 Q. In other words, you've done a number of other  
 2 occasions; is that true?  
 3 **A. That is true.**  
 4 Q. I'd ask that you turn in your CV that's already  
 5 been marked as Exhibit 83, and to save you time,  
 6 if you haven't found it yet, on the last page,  
 7 there's a list -- well, I'm sorry, strike that  
 8 question. Let's turn back to Exhibit 39. Okay.  
 9 At the end of your expert report, there's a list  
 10 of documents that you indicated that you  
 11 reviewed and used for your report, it's on  
 12 page 11 of your report. Would you agree with  
 13 me?  
 14 **A. Yes.**  
 15 Q. And you listed a number of documents and reports  
 16 that you specifically reviewed in preparation  
 17 for this hearing, true?  
 18 **A. Yes.**  
 19 Q. And you would have -- and as you're sitting here  
 20 today, you agree those are all ones that you  
 21 would have reviewed in preparation for this  
 22 hearing?  
 23 **A. Yes.**  
 24 Q. Is that an exhaustive list of documents and  
 25 reports that you would have reviewed as you

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1 prepared for your expert testimony?  
 2 **A. No.**  
 3 Q. And, in fact, Mr. Boese, as I can personally  
 4 attest, you've spent numerous nights in the  
 5 office looking at additional reports and studies  
 6 as you prepared for this hearing; is that true?  
 7 **MR. MCLEOD:** I'm going to object to  
 8 counsel personally attesting to items on  
 9 this.  
 10 **MR. STUCKY:** I'll just ask to  
 11 rephrase the question.  
 12 **PRESIDING OFFICER:** Fine.  
 13 **BY MR. STUCKY:**  
 14 Q. Mr. Boese, you've spent numerous hours in the  
 15 office at night and on weekends reviewing  
 16 additional reports and documents as you prepared  
 17 for your expert testimony. Is that a true  
 18 statement?  
 19 **A. That's -- that's very true.**  
 20 Q. Okay. And so this is very, very far from an  
 21 exhaustive list of what has helped to formulate  
 22 your expert opinions; is that true?  
 23 **A. That's true.**  
 24 Q. Mr. Boese, what is a -- what is the Groundwater  
 25 Management District Act?

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1 **A. That was a legislative declaration and statute**  
 2 **that was 1972 -- or there was actually a**  
 3 **previous attempt, and I don't remember the date,**  
 4 **maybe '67 or so, but eventually it became the**  
 5 **Groundwater Management District Act, 1972. That**  
 6 **allowed for the formation of groundwater**  
 7 **management districts like the Equus Beds GMD2.**  
 8 **Then it's a series of regulations -- or**  
 9 **statutes, I'm sorry, that govern how a district**  
 10 **can be formed, governed, their powers, finance,**  
 11 **it's a -- it's a fairly long document.**  
 12 Q. I'd ask that you turn to Exhibit 23 in your  
 13 notebook before you. And, again, I believe  
 14 judicial notice has already been taken of  
 15 this -- of this particular reference in our  
 16 notebook, but is that, in fact, the Groundwater  
 17 Management District Act?  
 18 **A. Which book is it in, Dave?**  
 19 Q. Number II, Volume II.  
 20 **A. Thank you. I'm sorry, what was your question?**  
 21 Q. My question is is what's shown in our notebook  
 22 as Number 22, is that, in fact, the Groundwater  
 23 Management District Act?  
 24 **A. That is the -- yes, that is the Groundwater**  
 25 **Management District Act that was -- the most**

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1 **recent update to that was November of 2018, so**  
 2 **that is the current Groundwater Management**  
 3 **District Act, which is K.S.A. 82a-1020 through**  
 4 **82a-1042.**  
 5 Q. Is that an act that -- or series of statutes  
 6 that would confer management of groundwater  
 7 management districts to a local level?  
 8 **A. Yes.**  
 9 Q. And so it would also dictate that these local  
 10 groundwater management districts would be  
 11 responsible, then, for managing the groundwater  
 12 resources of the State. Is that a true  
 13 statement? Or of the District, of the District?  
 14 **A. Yeah, the legislative declaration was taking**  
 15 **notice that the formation of a local groundwater**  
 16 **management district was in the public interest**  
 17 **for the proper management of that resource, so**  
 18 **yes.**  
 19 Q. Tell me what the Groundwater Management District  
 20 Act states about preserving the basic use  
 21 doctrine.  
 22 **A. I'll just go ahead and read that portion of the**  
 23 **legislative declaration, which is 82a-1020, it**  
 24 **says, it is the policy of this act to preserve**  
 25 **basic water use doctrine and to establish the**

1 **right of local water users to determine their**  
2 **destiny with respect to the use of groundwater**  
3 **insofar as it does not conflict with the basic**  
4 **laws and policies of the State of Kansas.**

5 Q. So in other words, this initial declaration is  
6 part of what you're basing your opinion on that  
7 this management and these duties as far as  
8 interpreting regulations for a local groundwater  
9 management district, are you saying that this  
10 declaration helps to create that duty?

11 **A. It -- it does and actually our -- the powers and**  
12 **duties are defined later on in this statute that**  
13 **we can review later, if necessary.**

14 Q. Well, Mr. Boese, I -- would it suffice to say  
15 that you could recite some of those duties and  
16 powers without even having to flip --

17 **A. Yeah, I -- I believe I could.**

18 Q. So just in a nutshell, for the record, to speed  
19 up this hearing process, tell me what some of  
20 those powers and duties are of the local  
21 groundwater management district.

22 **A. We can obviously be formed, we can have a**  
23 **office, we can employ staff, we can levy a**  
24 **special assessment. We get into the -- more of**  
25 **the nuts and bolts, part of our power or our**

1 **duty is to advise and assist in matters related**  
2 **to -- to groundwater, whether that be storage,**  
3 **recharge, anything that involves conservation**  
4 **and use of the resource.**

5 Q. Does this Management District Act suggest that a  
6 management program should be adopted by a local  
7 groundwater management district?

8 **A. It does, it does require adoption of a -- of a**  
9 **management program.**

10 Q. Has the District, in fact, adopted a management  
11 program?

12 **A. Yes.**

13 Q. Would you turn to Exhibit 71? Tell me when  
14 you're there.

15 **A. I'm there, Dave.**

16 Q. What is Exhibit 71?

17 **A. This is the current management program of the**  
18 **Equus Beds Groundwater Management District.**

19 Q. Is this -- so this is the management that was  
20 officially adopted effective May 1st of 1995?

21 **A. That's correct.**

22 **MR. STUCKY:** Under the same -- based  
23 on the fact that the witness has testified  
24 to what it is and also based on the fact  
25 that it's an official government document,

1 I move to admit the District's Exhibit 71.

2 **PRESIDING OFFICER:** Any objection?

3 71 will be admitted. Oh, I'm sorry, wait,  
4 did you have something to say?

5 **MR. MCLEOD:** If we could just get a  
6 clarification on the record whether this  
7 1995 document is the current management  
8 program?

9 **BY MR. STUCKY:**

10 Q. Could you clarify for the record if this  
11 document that's included in Exhibit 71 is the  
12 current management program for the District?

13 **A. It is.**

14 **MR. STUCKY:** I move to admit it at  
15 this point.

16 **PRESIDING OFFICER:** Okay. GMD 71  
17 will be admitted.

18 **BY MR. STUCKY:**

19 Q. Does your manage -- does the District's  
20 management program take into account aquifer  
21 safe yield principles?

22 **A. Yes.**

23 Q. In -- in 20 seconds or less, how does this  
24 management program take that into account?

25 **A. It's -- the goal of the District is to manage**

1 **the aquifer on a safe yield and basically --**  
2 **which would basically limit discharge to**  
3 **recharge and to prevent groundwater mining.**

4 Q. So does this management program dictate upon you  
5 as a manager of the District the need to conduct  
6 these safe yield calculations?

7 **A. Yes.**

8 Q. How does this management program take into  
9 account the concept of ground -- of groundwater  
10 quality principle?

11 **A. Again, that's one of the founding principles of**  
12 **the District, and the goal then would be to**  
13 **maintain the water quality through protection**  
14 **and remediation.**

15 Q. So once again, without making you read it for  
16 the record, just to speed this up, would you  
17 agree with me that this management program talks  
18 about the District's duty to analyze groundwater  
19 quality?

20 **A. Yes.**

21 Q. There's also some Groundwater Management  
22 District goals that are embedded within this  
23 management program. Is that a true statement?

24 **A. That is correct.**

25 Q. Is one of those goals to prevent groundwater

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1 mining by balancing groundwater withdrawals with  
 2 annual recharge?  
 3 **A. Yes.**  
 4 Q. And, again, in the goals section, it talks about  
 5 the need to protect natural water quality and  
 6 remediate groundwater contamination, does it  
 7 not?  
 8 **A. It does.**  
 9 Q. Based -- now, you have told me that you started  
 10 with the District 28 years ago so tell me a  
 11 little bit about your history of your  
 12 involvement in ASR Phase I, and -- and I'm going  
 13 to ask you some specific questions to try and  
 14 speed this up a little bit. With respect to ASR  
 15 Phase I, would you have helped to develop rules  
 16 and regulations based on your involvement --  
 17 your role in the District as it related to ASR  
 18 Phase I?  
 19 **A. Yes. To be -- to be clear, I was the hydrologic**  
 20 **technician during Phase I, but I would have been**  
 21 **involved in reviewing and assisting in**  
 22 **formulation of those rules and regulations.**  
 23 Q. Would you as the hydrologic technician have been  
 24 responsible for looking at permit conditions?  
 25 **A. Yes.**

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1 Q. Would you have been responsible for helping to  
 2 analyze water permits related to ASR Phase I?  
 3 **A. I think I did in Phase I. I'm trying to**  
 4 **remember that far back. I know absolutely in**  
 5 **Phase II, I reviewed every one of those. Phase**  
 6 **I, I think I would have assisted in reviewing**  
 7 **those applications.**  
 8 Q. Would you have looked at the memorandum of  
 9 understanding -- the memorandum of understanding  
 10 germane to ASR Phase I at that time?  
 11 **A. Yeah.**  
 12 Q. And would you have provided some input in the  
 13 development of that document as it related to  
 14 ASR Phase I?  
 15 **A. I certainly remember reviewing it and providing**  
 16 **any input to the -- to the District manager at**  
 17 **the time.**  
 18 Q. There's been discussion about ASR Phase I  
 19 facilities and the development of those  
 20 facilities in ASR Phase I. Would you also have  
 21 been involved in some of those discussions as it  
 22 related to the inception of ASR Phase I?  
 23 **A. Yes.**  
 24 Q. And I assume without you going into great detail  
 25 about your additional involvement in ASR Phase

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1 I, there would have been other duties that you  
 2 would have helped with as it related to the  
 3 creation of this whole ASR Phase I concept. Is  
 4 that a true statement?  
 5 **A. Yes.**  
 6 Q. I would ask that you turn in your exhibit  
 7 notebook to Exhibit 26. And it's going to be in  
 8 Volume II, I believe, Mr. Boese.  
 9 **MR. STUCKY:** And just for the  
 10 record, I believe that Exhibit 26 has  
 11 already been admitted into evidence, the  
 12 District Exhibit 26.  
 13 **PRESIDING OFFICER:** I think so.  
 14 **MR. STUCKY:** Or there was judicial  
 15 notice of it.  
 16 **PRESIDING OFFICER:** Right, yeah,  
 17 this is the Phase I approval? Yeah.  
 18 **BY MR. STUCKY:**  
 19 Q. So it's already been discussed, Mr. Boese, but  
 20 there's several references -- so I assume this  
 21 is a document that you're very familiar with; is  
 22 that right?  
 23 **A. Yes.**  
 24 Q. And, in fact, it's a document that you would  
 25 have had input on back in your early employment

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1 with the District. Is that a true statement?  
 2 **A. Yes.**  
 3 Q. Okay. I believe that there's three references  
 4 in this document to the concept of passive  
 5 recharge credits. And just to speed up this --  
 6 this discussion, specifically, it's on page 5,  
 7 found in 10b; page 14, number 3; and page 17,  
 8 order number 2. Do you agree with me that those  
 9 are the places passive recharge credits are --  
 10 are discussed in this particular document?  
 11 **MR. OLEEN:** Point of clarification,  
 12 Mr. Stucky, are we -- are you looking at  
 13 the Phase I approval, Exhibit 26?  
 14 **MR. STUCKY:** Yes.  
 15 **MR. OLEEN:** The witness can answer  
 16 your questions, I didn't seem to line up  
 17 those page numbers and paragraphs.  
 18 **A. I think, Mr. Stucky, I think the pages are**  
 19 **counting from the -- or, Mr. Oleen, the pages**  
 20 **are counting from the front, so I think when**  
 21 **Mr. Stucky said page 5, it's actually page 2 of**  
 22 **21 on the -- I mean, it's a little confusing**  
 23 **because the first couple of pages aren't**  
 24 **numbered. Does that make sense?**  
 25 **BY MR. STUCKY:**

1 Q. Yeah, that's -- that's correct, I was counting  
2 from the beginning of the exhibit, I apologize,  
3 but that's an important distinction to make for  
4 the record.

5 **A. So in answer to your question, Mr. Stucky,**  
6 **what's labeled as page 2 of 21, which would be**  
7 **page 5 as we count, does include language**  
8 **related to passive recharge credits. Can you**  
9 **tell me the other page numbers, Mr. Stucky?**

10 Q. The next one, counting from the beginning,  
11 page 14, number 3.

12 **A. Yes.**

13 Q. It's shown at the top as page 11 of 21,  
14 number 3, that also talks about passive recharge  
15 credits; is that right?

16 **A. Yes.**

17 Q. Okay. And then finally page -- it would be  
18 counting from the beginning, page 17, order  
19 number 2, so at the top of that it would be  
20 labeled as page 14 of 21 on the top of that  
21 document, do you see the final reference to --

22 **A. Yes.**

23 Q. -- passive recharge credits?

24 **A. Yes, I do.**

25 Q. Based on these three references throughout the

1 Q. Tell me when you're there. And just for the  
2 record, tell us what page out of 21 on the upper  
3 right-hand portion of this document it's found.

4 **A. It's page 12 of 21.**

5 Q. Tell me what conclusion number 13 tells us about  
6 minimum index levels.

7 **A. This was a conclusion by the chief engineer at**  
8 **the time that if the City could not withdraw**  
9 **credits below the minimum index level, which**  
10 **would have been the 1993 level that we've been**  
11 **commonly calling them, then the public interest**  
12 **in not diverting the Equus Beds groundwater**  
13 **below that would be protected.**

14 Q. So in other words, at least according to the  
15 chief engineer, in your view, if we're looking  
16 at water below those 1993 levels, as it's  
17 implied in this order and based on your  
18 interpretation of this order, whose water is it  
19 below those 1993 levels?

20 **A. It would be Equus Beds groundwater, it would**  
21 **be -- it would be naturally occurring**  
22 **groundwater. Not artificially recharged water.**

23 Q. So at least as it related to withdrawing below  
24 those -- those 1993 levels or withdrawing  
25 recharge credits below those 1993 levels, do you

1 document, would you agree with all the previous  
2 testimony, both Mr. Letourneau and perhaps the  
3 City's witnesses, that at least as it related to  
4 ASR Phase I, passive recharge credits were  
5 prohibited by this order?

6 **A. Yes.**

7 Q. As you look at the way passive recharge credits  
8 are -- are defined in this order, what jumps out  
9 at you?

10 **A. In relation to the first one, which is on page 2**  
11 **of 21, or page 5, the -- the chief engineer at**  
12 **the time lended a definition to passive recharge**  
13 **credit by calling it, with an i.e., water which**  
14 **the City could have legally pumped but did not**  
15 **pump. That stands out as being a passive**  
16 **recharge credit, it was -- would be getting**  
17 **credit for water not legally pumped from the**  
18 **City's native water rights.**

19 Q. Now, would you also agree with the prior  
20 testimony that this order talks about a minimum  
21 index level and what that means?

22 **A. Yes.**

23 Q. I would ask that you turn to conclusion  
24 number 13 in this document?

25 **A. Okay.**

1 believe the chief engineer is saying that the  
2 Equus Beds Aquifer would be protected by  
3 ensuring that does not occur?

4 **A. Yes.**

5 Q. And, in fact, the terminology that's used in  
6 this document is the public interest, is that  
7 right, is protected?

8 **A. That's correct.**

9 Q. And I've asked some questions about the meaning  
10 of that phraseology that's found there, but  
11 would -- do you agree with how I have phrased  
12 what that statement means, or is there anything  
13 additional, at least for our surface level  
14 purposes, that you would like to correct as far  
15 as how I characterized it?

16 **A. I think the only thing I would add is the basin**  
17 **storage area, which would be the area between**  
18 **the 1993 levels and the top of the aquifer, it's**  
19 **either the predevelopment or 10 feet below land**  
20 **surface, that was the area that was defined that**  
21 **the City could store water, inject water,**  
22 **surface water, and then recover later. And**  
23 **below that, they could not do that. They could**  
24 **inject below that but they could not recover.**

25 Q. Do you agree that passive recharge credits



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1 should not be allowed pursuant to ASR Phase I?  
 2 **A. I do.**  
 3 Q. And also based on your employment with the  
 4 District, do you agree that there's significance  
 5 with the protection that was assured in the ASR  
 6 Phase I order as shown in recommendation  
 7 number 13?  
 8 **A. I do.**  
 9 Q. Now I'd like to shift to some of your brief  
 10 involvement or history with ASR Phase II. We  
 11 just established that you were involved from the  
 12 inception and through the development of ASR  
 13 Phase I. Were you also involved from the  
 14 inception and -- and through the development of  
 15 ASR Phase II?  
 16 **A. Yes.**  
 17 Q. During the development of ASR Phase II, would  
 18 you have had occasion to reference or look at  
 19 rules and regulations to try and determine what  
 20 would be proper with respect to ASR Phase II?  
 21 **A. Yes.**  
 22 Q. Tell me in -- briefly what that rule would have  
 23 been.  
 24 **A. Well, obviously, the City filed ASR Phase II**  
 25 **recharge recovery permits. Initially, they**

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1 **filed 20 of them -- 20 of them, I believe. I**  
 2 **would have done all the review of those. And**  
 3 **then the City filed, I think, in two different**  
 4 **cases after that, I think four more at one time**  
 5 **and then six more, for a total of 30. Those are**  
 6 **what's subject to the proposal that we have in**  
 7 **front of us today. So I would have reviewed all**  
 8 **of those water permit applications to see if**  
 9 **they meet the District's rules and regulations**  
 10 **for an ASR water permit application.**  
 11 Q. And it sounds like during the development of ASR  
 12 Phase II there were also rule changes and  
 13 changes to regulations that were being pursued  
 14 at that time; is that true?  
 15 **A. Not that I recall. The -- the rules and**  
 16 **regulations in place for Phase I are the same**  
 17 **ones that were used for Phase II. I can't think**  
 18 **of any, necessarily, modifications. Now we have**  
 19 **a modification that occurred after that to -- to**  
 20 **the minimum index levels.**  
 21 Q. So were you involved in developing the rules and  
 22 the regulations, at least in some part, as they  
 23 related to ASR Phase I and ASR Phase II?  
 24 **A. Yes.**  
 25 Q. I think you already said that you -- you would

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1 have recommended or helped to impose permit  
 2 conditions as it related to ASR Phase II?  
 3 **A. Yes.**  
 4 Q. There's been a lot of discussion about the  
 5 infrastructure for ASR Phase II and the  
 6 construction of this -- of this very impressive  
 7 infrastructure for ASR Phase II. Do you recall  
 8 some of that discussion?  
 9 **A. Yeah.**  
 10 Q. Would you have also given input on that  
 11 infrastructure based on your role with the  
 12 District during that time?  
 13 **A. As related to well siting and land acquisition**  
 14 **and -- and spacing waivers, those kind of**  
 15 **things, yes.**  
 16 Q. Would you also have, and I think you said this  
 17 already, and if you did, I apologize, but you  
 18 would have looked at the City's permits and  
 19 helped to analyze the City's permits related to  
 20 ASR Phase II?  
 21 **A. I believe I did every one of them myself, yes,**  
 22 **all 30 of them. I may have had some assistance**  
 23 **from a hydrogeologist at some point in time, but**  
 24 **I think I personally reviewed all 30 of them.**  
 25 **Actually, I know I personally reviewed all 30 of**

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1 **them.**  
 2 Q. So in having personally reviewed all 30 of them,  
 3 the ultimate recommendation that came from the  
 4 District with regard to those permits, would  
 5 that have been your recommendation?  
 6 **A. That was -- because of the uniqueness of this**  
 7 **project, the District Board was also involved in**  
 8 **formulating those -- those recommendations based**  
 9 **on staff recommendations.**  
 10 Q. So it was your recommendation that went to the  
 11 Board; is that right?  
 12 **A. That would have been correct.**  
 13 Q. Did the Board go with your recommendations in  
 14 those regards with respect to those 32 permits?  
 15 **A. I can't think of when they did not. I mean,**  
 16 **there might have been some nuances, some slight**  
 17 **changes, you know, maybe some additions --**  
 18 **additional conditions, but by and large, I would**  
 19 **say that would be a true statement that they --**  
 20 **they went with staff recommendations of those**  
 21 **30.**  
 22 Q. Turn to Exhibit 28 in your notebook. Well,  
 23 let's -- let's strike that. Turn to Exhibit 58  
 24 in your notebook first. And just let me know  
 25 when you're there.

1 **A. Is that in Number IV, David?**  
2 Q. Truth is I just now found it, yes, Number IV.  
3 **A. 58, correct?**  
4 Q. That's correct. What is Exhibit 58, Mr. Boese?  
5 **A. 58 is a order from the chief engineer, Division**  
6 **of Water Resources. The date of the letter is**  
7 **September 24, 2009, or date of the cover letter,**  
8 **this is the findings and order approving Phase**  
9 **II of the ASR project.**  
10 Q. On that third page counting from the front,  
11 there's an approval of application and permit to  
12 proceed; is that right?  
13 **A. That's correct.**  
14 Q. And it's officially signed by Mr. Barfield; is  
15 that right?  
16 **A. Yes.**  
17 Q. So you referenced 32 permits that you personally  
18 reviewed and gave input on, would this be an  
19 example of one of those 32 permits?  
20 **A. Yes. And for clarification, I think it's 30. I**  
21 **may have misspoken, but it's 30 ASR Phase II**  
22 **applications. In addition to the Phase I's that**  
23 **I would have reviewed. But, yes, this is an**  
24 **example of one of the initial 20 ASR Phase II**  
25 **recharge and recovery permits that was approved**

1 aquifer unless we're above that 1993 level?  
2 **A. Yes, for that cell number 6, which is where this**  
3 **particular recharge and recovery well is located**  
4 **is in index cell number 6.**  
5 Q. If we were to walk through the other 29 permits  
6 that you reviewed, would we find the same  
7 requirement or -- in all additional 29 permits?  
8 In other words, that recharge credits couldn't  
9 be recovered if we were below that 1993 level?  
10 **A. Yes. And it's different for -- depending on**  
11 **what cell you're in, so that elevation number**  
12 **can change; but that was based on that minimum**  
13 **index level established at the time, which we**  
14 **have been calling the 1993 water levels.**  
15 Q. As it relates to our prior discussion in this  
16 hearing, would you agree that number 21 in this  
17 permit ensures that the City, being the operator  
18 of the aquifer storage and recovery well  
19 identified in this permit, shall not impair  
20 other water rights?  
21 **A. Yes.**  
22 Q. And would you agree that all these permit  
23 conditions should be attached weight and be  
24 given significance as they relate to ASR Phase  
25 II?

1 **by the chief engineer.**  
2 **MR. STUCKY:** I move to admit the  
3 District's Exhibit 58.  
4 **PRESIDING OFFICER:** Any objections?  
5 GMD 58 is admitted.  
6 **BY MR. STUCKY:**  
7 Q. As it relates to Exhibit 58, what does  
8 Exhibit 58 tell us about withdrawing below  
9 minimum index levels?  
10 **A. You want me to cite the -- the condition?**  
11 Q. Yes, please.  
12 **A. Condition 19, which is on page 3 of that**  
13 **approval, says the proposed recovery of water**  
14 **artificially recharged by the City shall only**  
15 **occur when recharge credits are determined to be**  
16 **available in cell number 6 and the static water**  
17 **level elevation is above elevation 1,387 mean**  
18 **sea level. Looks like they forgot the word**  
19 **feet, it should say 1,387 feet.**  
20 Q. So in other words, in this order from -- that's  
21 signed by Mr. Barfield, as it relates to a --  
22 this particular permit for ASR Phase II, and  
23 this permit number as you mentioned is 46,714,  
24 there's a specific requirement that recharge  
25 credits not be captured or withdrawn from the

1 **A. Yes.**  
2 Q. We talked about a number of -- a couple  
3 concepts, safe yield, minimum index levels, the  
4 public interest. Just to sum it up for us  
5 quickly on the record, if you can, what are some  
6 of those other permit conditions that you  
7 believe are important that stem from this given  
8 permit?  
9 **A. Well, I would say all of them are -- are**  
10 **important.**  
11 Q. Could you highlight some of the ones that have  
12 been discussed the most in this hearing?  
13 **A. Can I have a minute to look through them real**  
14 **quick, refresh my memory? Having glanced**  
15 **through it again, I believe they're all**  
16 **important. Obviously the -- some of the initial**  
17 **conditions on what the authorized rate and**  
18 **quantity are obviously very important; the**  
19 **perfection period, the time to complete is**  
20 **important; the requirement to have a KDHE UIC,**  
21 **underground injection control, permit is**  
22 **important. Obviously the ones we've already**  
23 **stated, that they can only withdraw the recharge**  
24 **credit when the water level is above those 1993**  
25 **levels, not impairing other water rights, not**

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1 **negatively affecting the public interest,**  
 2 **subject -- it also had to be subject to our**  
 3 **approved MOU. Those are a few that I see, Dave.**  
 4 **Again, I think all conditions are important, but**  
 5 **some -- some may carry some additional weight.**  
 6 Q. So a lot of those concepts have already been  
 7 discussed in this hearing. As they're outlined  
 8 in the conditions in this permit, you would --  
 9 you would agree that those conditions are  
 10 important based on your 28 years of experience  
 11 with the District and having been involved in  
 12 reviewing these permits?  
 13 **A. Yes, and I would -- I would add a number of**  
 14 **these permit conditions were recommended by the**  
 15 **GMD, by the -- by the District.**  
 16 Q. And at this time when these permits came out,  
 17 we're talking 2009, you would have already been  
 18 the District manager at that time; is that  
 19 right?  
 20 **A. That's correct.**  
 21 Q. So if there was an official recommendation from  
 22 the District regarding these permit conditions,  
 23 those would have came from you; is that right?  
 24 **A. They would have came from the -- from the**  
 25 **District Board, I would have wrote the letter**

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1 **based on the District Board action on those --**  
 2 **on the water permit applications, so based on**  
 3 **staff recommendations, which would have been**  
 4 **mine.**  
 5 Q. I now ask that you move back to Exhibit 28.  
 6 Tell me when you're on Exhibit 28 and Volume II,  
 7 it looks like.  
 8 **A. I'm finally there.**  
 9 Q. Okay. To speed up our talk about Exhibit 28,  
 10 you would agree with me that this is a finding  
 11 and order with regard to ASR Phase II; is that  
 12 right?  
 13 **A. Yes.**  
 14 Q. And, in fact, whether this was admitted into the  
 15 record, at the very bare minimum, there's been  
 16 judicial notice of this document because it's an  
 17 important document as it relates to ASR Phase  
 18 II; is that right?  
 19 **A. Yes.**  
 20 Q. Okay. In this document, there's also a  
 21 reference to passive recharge credits, and if we  
 22 count from the beginning, I believe it's on  
 23 page 5, order number 2.  
 24 **A. Yeah.**  
 25 Q. And it's already been read for the record that

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1 it states that passive recharge credits shall  
 2 not be allowed. Mr. Boese, I asked a question  
 3 of Mr. Letourneau when he was on the stand if it  
 4 was his view of whether or not the same concept  
 5 of passive recharge credits that was embedded in  
 6 the ASR Phase I order is also embedded into this  
 7 ASR Phase II order. What's your belief in that  
 8 regard?  
 9 **A. I believe they're the same.**  
 10 Q. So in other words, you provided an  
 11 interpretation of what was meant from a  
 12 definition standpoint of a passive recharge  
 13 credit in ASR Phase I. Do you think that same  
 14 definition applies to ASR Phase II?  
 15 **A. Yes, specifically that it would represent water**  
 16 **not pumped from the City and water that is not**  
 17 **physically injected into the aquifer. Those are**  
 18 **the two -- two definitions that were given in**  
 19 **Phase I.**  
 20 Q. Also in Exhibit 20 -- 28, on page 5, order  
 21 number 8, there's a discussion about minimum  
 22 index levels; is that -- is that right?  
 23 **A. Yeah, it's a pretty long -- pretty long**  
 24 **condition, it probably should have been broken**  
 25 **into two; it talks about the top and the bottom,**

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1 **but, yes, roughly about the last third --**  
 2 Q. Well, let's talk about the last sentence -- last  
 3 third of it.  
 4 **A. Yes.**  
 5 Q. Particularly that last sentence.  
 6 **A. Yes.**  
 7 Q. What does that tell us?  
 8 **A. That recharge credits may be withdrawn from a**  
 9 **cell only when recharge credits are determined**  
 10 **to be available from the cell and the static**  
 11 **water level at its index well is above the**  
 12 **lowest index level.**  
 13 Q. But it also references the fact that the City  
 14 can actually recharge even if the static water  
 15 level has dropped below that index level?  
 16 **A. Yes, the rest of that sentence says, however,**  
 17 **water may be recharged when the static water**  
 18 **level is below the lowest index level in that**  
 19 **well. It does not prohibit the City from --**  
 20 **from recharging when the water level is below**  
 21 **that but prohibits recovery.**  
 22 Q. So while we're on this point, number 8 also  
 23 tells us something about protecting neighboring  
 24 wells, what does it tell -- what does it tell us  
 25 about that?

1 **A. I'm sorry, can you repeat that or rephrase that?**  
2 Q. I'm sorry, I misspoke. The beginning of order  
3 number 8, what does that tell us?  
4 **A. That -- that speaks to when the City cannot**  
5 **inject if the water level is too high because it**  
6 **could impact other -- other users is why that**  
7 **condition was put in. I shouldn't say other**  
8 **users, could impact structures and those kind of**  
9 **things. We didn't want the water level to be**  
10 **raised too high, you don't want the water level**  
11 **at land surface necessarily, so there was a**  
12 **10-foot restriction. So it's predevelopment or**  
13 **10 feet, I generally just say it's 10 feet, but**  
14 **you definitely can't go above 10 feet above land**  
15 **surface.**  
16 Q. While we're on this subject, do both ASR Phase I  
17 order and ASR Phase II order, do they provide  
18 any assurances to other -- other water right  
19 holders in the District as far as the fact that  
20 there won't be impairment or their water quality  
21 will be preserved?  
22 **A. As far as the MOU with the District, which is**  
23 **referenced, there is some protections to**  
24 **domestic well owners within 660 feet if they're**  
25 **impaired, and there's also protection to**

1 II, in conjunction with the permits and the  
2 orders, what protections are offered to  
3 neighboring well owners pursuant to the City's  
4 operation of its ASR facilities?  
5 **A. I think there's -- the number one is the one we**  
6 **just talked about was the City cannot degrade**  
7 **the ambient groundwater use in the basin storage**  
8 **area. There's also a protection that the City**  
9 **can't withdraw the -- the credits below the 1993**  
10 **levels; that also protects other users from**  
11 **impairment by withdrawing of the groundwater**  
12 **below the 1993 levels.**  
13 Q. Mr. Boese, you're also familiar with the aquifer  
14 maintenance credit proposal; is that right?  
15 **A. Yes.**  
16 Q. When did you first become familiar with this  
17 concept of aquifer maintenance credits?  
18 **A. I probably can't put a specific date on it.**  
19 **Maybe a little bit of background, we were**  
20 **working with the City and their consultants to**  
21 **do some groundwater modeling on what -- what the**  
22 **groundwater level looked like in a drought. I**  
23 **think we started that maybe sometime in early**  
24 **2016, I'm not sure of the date, and then I**  
25 **believe sometime in 2017, the City or the City**

1 **domestic wells throughout the basin storage area**  
2 **if they're impacted by water quality, if that's**  
3 **what you're referring to.**  
4 Q. Well, let me ask you this, let's turn to number  
5 12 on page 6 of this document. At the very  
6 beginning, it says, that the source water used  
7 for artificial recharge shall not degrade the  
8 ambient groundwater quality use in the basin  
9 storage area. Previously, I asked  
10 Mr. Letourneau some questions about taking  
11 source water from the Little Arkansas River and  
12 putting it into the aquifer and the assurances  
13 in that regulation that we wouldn't impact,  
14 quote, the ambient groundwater quality in the  
15 basin storage area. Do you recall that -- that  
16 line of questioning?  
17 **A. Yes.**  
18 Q. And do you believe that this condition in  
19 number 12 identifies or embeds into this order  
20 that requirement?  
21 **A. Yes, it advises that the City's recharge**  
22 **activity would not degrade the ambient**  
23 **groundwater use in the basin storage area.**  
24 Q. So in conjunction with the memorandums of  
25 understanding in place for ASR Phase I and Phase

1 **consultants approached us with this AMC concept.**  
2 **PRESIDING OFFICER:** Excuse me, if  
3 this is a new line of questioning, maybe it  
4 would be a good time for a lunch break.  
5 **MR. STUCKY:** Sure.  
6 **PRESIDING OFFICER:** All right.  
7 Okay.  
8 **MR. STUCKY:** And I was just  
9 wondering if -- we did this another day,  
10 just I would love to get through this  
11 hearing in five days if we possibly could,  
12 is there a way we can shorten the lunch  
13 hour?  
14 **PRESIDING OFFICER:** We can shorten  
15 the lunch hour. I've just been rounding it  
16 up with the clock, but it is 12:20,  
17 everybody's usually back in plenty of time,  
18 how about 10 after 1:00, 50 minutes for  
19 lunch instead of a little over an hour?  
20 **MR. STUCKY:** I would even support  
21 starting at 1:00, if it's okay with  
22 everybody else.  
23 **MR. OLEEN:** I should support that  
24 but I'm hungry and concerned that I  
25 couldn't get back in time.

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1 **MR. STUCKY:** All right.  
 2 **PRESIDING OFFICER:** Yeah, let's aim  
 3 for 10 after 1:00. Okay, thank you.  
 4 (Thereupon, a lunch recess was  
 5 taken; whereupon the following was  
 6 had.)  
 7 **PRESIDING OFFICER:** Okay. It's 10  
 8 after 1:00, we're back on the record. And,  
 9 Mr. Stucky, you may continue.  
 10 **BY MR. STUCKY:**  
 11 Q. Mr. Boese, I had just asked you a couple  
 12 questions about when you started your  
 13 involvement with the City's AMC proposal  
 14 concept.  
 15 **A. Mr. Stucky, could you pause one second, I'm**  
 16 **going to shut that door with the background**  
 17 **noise from the -- from their refrigerator and**  
 18 **stuff in there? Sorry, Dave.**  
 19 Q. With respect to the City's Exhibit Number 1,  
 20 which was the proposal document, have you --  
 21 have you also read that document on numerous  
 22 occasions?  
 23 **A. I have read it numerous times, yes.**  
 24 Q. And have you also examined the City's drought  
 25 model, at least in some capacity?

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1 **A. Yeah.**  
 2 Q. Have you also examined the City's MODFLOW  
 3 modeling?  
 4 **A. Yes, between myself and my former**  
 5 **hydrogeologist, we actually received the model**  
 6 **and ran it through our GMS software, so yes.**  
 7 Q. And we already talked about Exhibit 61, which is  
 8 where you were invited by USGS to help formulate  
 9 that model. Would that also suggest your  
 10 involvement in developing that model and  
 11 understanding that model?  
 12 **A. Yes.**  
 13 Q. And as far as the City's proposal document,  
 14 would you describe yourself as quite familiar  
 15 with the City's proposal document?  
 16 **A. Yes.**  
 17 Q. And you understand the basic tenets of the  
 18 proposal document, so I don't think we need to  
 19 go through those again; is that right?  
 20 **A. That's correct.**  
 21 Q. As it related to the Equus Beds groundwater flow  
 22 model that's used in that proposal, tell me some  
 23 of the work you did in analyzing that particular  
 24 model, in a nutshell. And I think it's already  
 25 outlined in your expert report, so in a

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1 nutshell, would you agree that you looked at the  
 2 model structure, you looked at initial and  
 3 boundary conditions, the suitability of input  
 4 files, the calibration process, you observed  
 5 data used to calibrate, you did that along with  
 6 your hydrogeologist?  
 7 **A. That's correct.**  
 8 Q. So along with your hydrogeologist, did you  
 9 examine as -- or examine that model in great  
 10 detail?  
 11 **A. I would say we did a pretty good job of**  
 12 **reviewing it. Again, we -- initially, we took**  
 13 **the City's MODFLOW and ran it into our GMS**  
 14 **because the GMS allows you to visually look at**  
 15 **the modeled results and the inputs much easier.**  
 16 **So we -- we did that, so we've been involved**  
 17 **with that for sometime.**  
 18 Q. Along with Steve, you -- did you look at all the  
 19 tables in the model?  
 20 **A. It may be hard to say if I looked at every**  
 21 **table, or we looked at every table, but I would**  
 22 **say we probably did. I mean, there may be some**  
 23 **tables that were embedded that we didn't -- we**  
 24 **didn't examine. So I don't want to answer that**  
 25 **we looked at every single one, but I would say**

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1 **that we looked at every one that we -- that we**  
 2 **had available.**  
 3 Q. What about the MODSIM model, what was your --  
 4 what was your level of review with respect to  
 5 the drought model? It's in your expert report,  
 6 just to speed this up, would you agree that you  
 7 spot-checked data for the following parameters,  
 8 evapotranspiration, recharge rates, hydraulic  
 9 conductivity, pumping rates, layer thickness,  
 10 specific yield and storage, initial heads, top  
 11 and bottom elevations, are those all things you  
 12 looked at?  
 13 **A. That would have been for the MODFLOW model,**  
 14 **yeah.**  
 15 Q. Yes, I shifted gears.  
 16 **A. Yes, the MOD -- that would have been for the**  
 17 **MODFLOW, those parameters you're talking about**  
 18 **would have been MODFLOW model parameters.**  
 19 Q. Yeah, I misspoke, I --  
 20 **MR. OLEEN:** Point of clarification,  
 21 Mr. Stucky, were you reading from  
 22 Mr. Boese's report just now or not?  
 23 **MR. STUCKY:** Yeah, those are all  
 24 terms that I pulled out of his expert  
 25 report.

1 **MR. OLEEN:** But not like a specific  
2 list somewhere --  
3 **MR. STUCKY:** There is a list --  
4 **MR. OLEEN:** -- verbatim?  
5 **MR. STUCKY:** -- to that effect in  
6 his report, towards the beginning.  
7 **BY MR. STUCKY:**  
8 Q. So you've looked at both the MODSIM model and  
9 the MODFLOW model as it relates to the City's  
10 proposal?  
11 **A. Well, as far as the MODSIM, we looked at the --**  
12 **what the City gave us as far as inputs and**  
13 **outputs; we didn't actually run the MODSIM model**  
14 **at our office at all.**  
15 Q. What does it mean to analyze starting heads?  
16 **A. Well, you have to have a starting point where**  
17 **you're going to start your model at, and you**  
18 **can -- you can pick any year that you want, I**  
19 **guess, as far as what's available for the model,**  
20 **or you can modify those heads, the starting**  
21 **water level heads.**  
22 Q. Is that something you would have looked at with  
23 respect to the City's drought modeling?  
24 **A. To the MODFLOW model, yes.**  
25 Q. You indicated that your involvement in

1 that were discussed?  
2 **A. Yes, originally we agreed to start with 2010**  
3 **starting water level heads. And, in fact, there**  
4 **was a letter from the City when they provided**  
5 **the model to us in November, I believe, of 2016,**  
6 **it stated that the water level heads began in**  
7 **2020, 'cause we were modeling a 2011 and 2012**  
8 **drought repeated four times, so it was logical**  
9 **in two ways to start with the 2010, and that was**  
10 **the condition before the drought started.**  
11 **Excuse me. And 2010 was more -- more of an**  
12 **average representation of what the water levels**  
13 **in the well field are. '98 is pretty low, 2016,**  
14 **2017 is pretty high, 2010 was -- was more of a**  
15 **representative average of the water levels in**  
16 **the well field. So there was really two reasons**  
17 **that the 2010 -- and that was something that**  
18 **we'd agreed upon early on between the staff --**  
19 **the District staff and the District -- and the**  
20 **City consultants and staff, to start with 2010.**  
21 Q. Mr. Boese, a moment ago, and Your Honor looked  
22 at you when you said that, you said the starting  
23 heads should be 2020. I think you --  
24 **A. I'm sorry.**  
25 Q. -- you just misspoke, you meant 2010?

1 discussing the City's proposal that's before us  
2 today began in 2016. At some point -- so at  
3 least initially, were you pretty involved in the  
4 process and the discussions?  
5 **A. The -- the original discussions were -- involved**  
6 **the City desiring to know what the aquifer**  
7 **looked like during a drought, so we had a**  
8 **cooperative effort between myself and my staff,**  
9 **along with the City and the City's consultants**  
10 **to, I guess, put our minds together to see what**  
11 **the best way to look at what that would look**  
12 **like, what a drought scenario would look like,**  
13 **impact to the groundwater levels in the well**  
14 **field. So we started that -- again, I don't**  
15 **remember the date, I want to say it was early**  
16 **2016, and proceeded through that for several**  
17 **months.**  
18 Q. When those discussions first began, was -- we've  
19 talked about the 1998 levels and how the  
20 starting heads for the City's modeling was based  
21 on the 1998 levels. Do you recall that  
22 discussion?  
23 **A. You're right, the model that was used for the**  
24 **proposal starts with 1998 water level heads.**  
25 Q. At some point, were there other starting heads

1 **A. I did mean 2010, I'm sorry. I did mean 2010,**  
2 **yes, thank you.**  
3 Q. Turn to that black notebook from the City.  
4 **MR. OLEEN:** While the witness is  
5 doing that, Mr. Stucky, I'm sorry to  
6 interrupt again, I -- I don't see starting  
7 heads, I don't remember that phrase in this  
8 report, and I just -- I guess it's not your  
9 job to totally help me follow along where  
10 you're discussing, but you rattled off a  
11 list of modeling things that is supposedly  
12 in Mr. Boese's report and I'm not seeing a  
13 lot of modeling discussion. I wonder if I  
14 have an outdated expert report?  
15 **MR. MCLEOD:** I will just mention  
16 also I -- I quickly looked as that  
17 discussion was taking place and I didn't  
18 see any modeling information in Mr. Boese's  
19 report, and I'm wondering if Counsel is  
20 referencing a report that was never  
21 actually provided to the other parties.  
22 **PRESIDING OFFICER:** Could you remind  
23 me what exhibit number?  
24 **MR. OLEEN:** 39 --  
25 **PRESIDING OFFICER:** 39.

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1 **MR. OLEEN:** -- Madam Officer. For  
 2 the record, the one I'm looking at is  
 3 dated -- my copy, at least, is dated  
 4 February 18, 2019.  
 5 **MR. STUCKY:** I would -- I would  
 6 agree that the reference to starting heads,  
 7 I'm not immediately seeing that term used  
 8 in the expert report, I must have  
 9 misremembered.  
 10 **MR. MCLEOD:** Madam Chairperson, I --  
 11 I'm just compelled to add at this juncture  
 12 as well, it sounded like in Mr. Boese's  
 13 testimony that he was saying that the  
 14 District had taken the model and data  
 15 provided by the City and ran that, he and  
 16 Mr. Flaherty, several times in their  
 17 software, which he described as providing  
 18 better visual presentation, and I don't  
 19 believe we were provided any of those  
 20 modeling results in discovery either. And  
 21 we did have discovery outstanding that  
 22 asked for such items.  
 23 **A. Can I speak to that or not?**  
 24 **BY MR. STUCKY:**  
 25 **Q.** Please speak to that, Mr. Boese.

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1 **A. That was during the process of reviewing the**  
 2 **model. We did not provide -- I don't believe we**  
 3 **generated any official results. We provided**  
 4 **that back to the City, especially Mr. Macey**  
 5 **that's sitting here, and he could probably, if**  
 6 **you need to call him back, he could -- he could**  
 7 **attest to that that we sat down and assisted**  
 8 **Mr. Macey and the consultants. We did not**  
 9 **provide -- we did not produce a report; we were**  
 10 **merely trying to assist the City at that time to**  
 11 **understand if there were any issues with the**  
 12 **model.**  
 13 **MR. OLEEN:** My initial concern was  
 14 making sure that I had the current expert  
 15 report, and the copy that I have doesn't  
 16 have any modeling analysis in it. And if  
 17 that's not the line of questioning that  
 18 Mr. Stucky is going down, then I don't  
 19 really have concerns, but if we're going  
 20 down a line of questions about the  
 21 witness's modeling analyses, I don't see  
 22 those in this report. There's other  
 23 opinions on things, but I don't see  
 24 modeling critiques in here.  
 25 **MR. STUCKY:** The critiques on the

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1 modeling and the results, that is, I  
 2 believe, discussed in this report, but at  
 3 least at this juncture, that's not the line  
 4 of questioning I was going to go down.  
 5 And, frankly, the extent to which I go down  
 6 that line of questioning with this witness  
 7 will be, at least to some degree, limited.  
 8 **PRESIDING OFFICER:** So we've had  
 9 responses to the objections, are there --  
 10 are you satisfied with the responses, where  
 11 are ...  
 12 **MR. MCLEOD:** I am not and I think  
 13 Mr. Stucky should point out to us at this  
 14 moment where in this report he believes the  
 15 modeling critique is set forth. And if I  
 16 understood what Mr. Boese just said in  
 17 response, he's saying that there was some  
 18 back and forth with Mr. Macey about  
 19 modeling results, but none of his modeling  
 20 results were preserved or provided in  
 21 discovery, I think he's recognizing that,  
 22 and so we don't have any foundation for  
 23 whatever modeling testimony he's going to  
 24 give based on that -- that modeling that he  
 25 says was done.

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1 **PRESIDING OFFICER:** Can you help us  
 2 find our way through this?  
 3 **MR. STUCKY:** Yes. In his expert  
 4 report, he talks about the results in -- he  
 5 talks about the proposal and the data  
 6 utilized in the proposal and his analysis  
 7 of that data, and, frankly, I think that  
 8 consideration of the model would flow from  
 9 that or would stem from that.  
 10 But that said, I think for the purposes  
 11 of my questioning, I can keep the questions  
 12 focused on what's actually in the proposal  
 13 and the data sets that are in the proposal  
 14 that I don't think there's any question  
 15 that he indicates he reviewed so ...  
 16 **PRESIDING OFFICER:** Will that  
 17 address ...  
 18 **MR. MCLEOD:** It -- it utterly  
 19 doesn't, and I notice that Counsel again  
 20 didn't give us any specific references to  
 21 anything in this report. It appears to me  
 22 that we're setting up a raft of surprise  
 23 modeling testimony that was not shared in  
 24 discovery and is not referenced in the  
 25 witness's expert report, and it is just

1 grossly improper.  
2 **MR. STUCKY:** Okay.  
3 **PRESIDING OFFICER:** Well, if -- go  
4 ahead, Mr. Stucky. I thought I heard you  
5 say you were not going to be questioning  
6 about modeling now. Did I misunderstand?  
7 **MR. STUCKY:** Yeah, right now, I am  
8 just asking some background questions and  
9 the extent to which this witness -- we have  
10 another witness that will testify on the  
11 modeling, that wasn't the purpose of this  
12 witness. But for what it's worth, the  
13 report says, the drought and groundwater  
14 model submitted with the proposal  
15 indicates, on the bottom of page 4, and  
16 then there's a discussion of what it  
17 indicates and how -- how there was a  
18 concern with some of those results. And so  
19 it is referenced in different places in the  
20 report, and that's just one of several  
21 examples that it is something he  
22 references.  
23 But I was, at least at this point, I was  
24 planning on going down a different line of  
25 questioning. And as I look through what

1 levels or the modeled minimum drought water  
2 level. That's, again, a summation of  
3 what's in the proposal and testimony we've  
4 already had.  
5 And then where Mr. Boese is going with  
6 that is the coup d'etat at the end of that  
7 paragraph where he notes that there's a  
8 typo in table 2-10 of the proposal, notably  
9 for index cells 1 and 2 as the proposed  
10 levels don't accurately represent the  
11 current minimum index levels minus the  
12 proposed contingency. So that's not a  
13 modeling analysis, that's a summary of a  
14 couple things from the proposal, and then  
15 it's saying there's a typo in a table.  
16 And I think there is nothing in this  
17 report that enables this witness to testify  
18 to any modeling analysis, not about a  
19 MODFLOW analysis, not about a MODSIM  
20 analysis, because we have been furnished no  
21 details of those analyses, either in this  
22 report or in discovery responses.  
23 **PRESIDING OFFICER:** And that's what  
24 I heard you agreeing with in terms of the  
25 line of questioning that you want to --

1 I -- I plan to ask, it will have very, very  
2 little to do with the City's -- it's not  
3 going to be focused on the technical  
4 aspects of the City's modeling, and I think  
5 he'll discover that as I proceed with my  
6 questioning, if I am allowed to do so.  
7 **PRESIDING OFFICER:** So if he avoids  
8 the modeling issue --  
9 **MR. MCLEOD:** If he avoids anything  
10 that has to do with modeling altogether,  
11 because as I look at that paragraph he just  
12 referred to on page 4 of the report, it's  
13 just summing up what was done with the  
14 modeled 1 percent drought by the City. I  
15 mean, it basically just says, the drought  
16 and groundwater model submitted with the  
17 proposal indicates the groundwater levels  
18 in a modeled 1 percent drought will drop  
19 below established minimum index levels in  
20 17 of the 38 cells. That's -- that's just  
21 referencing what the proposal says.  
22 The proposed revised lowered minimum  
23 index levels also included a contingency  
24 between approximately 10 feet and 23 feet  
25 subtracted from either the existing minimum

1 **MR. STUCKY:** Yeah, I -- I should be  
2 allowed to ask about the proposal itself  
3 and the details of the proposal itself and  
4 the numbers utilized in the proposal and  
5 Mr. Boese's analysis of those numbers, but  
6 as far as trying to involve this expert  
7 in -- with regard to having dissected the  
8 model and the outcomes of the modeling, we  
9 have two experts that we've brought for  
10 that purpose, and that's the purpose for  
11 those two experts. We're using this  
12 witness for a different purpose. So if I  
13 would be allowed to proceed, I think it  
14 would be clear that that's not where I'm  
15 heading so ...  
16 **PRESIDING OFFICER:** Well, let's --  
17 mindful of the fact that you have other  
18 experts to address modeling analysis, let's  
19 work to avoid continuing objections and  
20 proceed.  
21 **MR. STUCKY:** Thank you.  
22 **BY MR. STUCKY:**  
23 Q. So if you could turn in that black notebook to  
24 the reference back in -- to the 2010 starting  
25 heads, tell me -- tell me where that reference



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1 is made to the City having started with -- and,  
 2 again, this is being used for background  
 3 purposes. Tell me that when the -- where it  
 4 exists in the City's notebook to indicate that  
 5 when the -- when the City first began their  
 6 discussions that they were utilizing the 2010  
 7 starting heads.  
 8 **A. Okay. Again, it's in the black notebook under**  
 9 **proposal correspondence, it would be on page 40**  
 10 **and 41, 42. There's attachment 43, but I think**  
 11 **the crux of it is on page 40, which is a letter**  
 12 **from the City of Wichita and, excuse me, signed**  
 13 **by -- well, it's not signed, but it's from Alan**  
 14 **King, with the City of Wichita, this was dated**  
 15 **November 15th, 2016.**  
 16 **This followed several months of the GMD2**  
 17 **staff, the District staff, and the City staff**  
 18 **and consultants working on the modeling. I**  
 19 **think at some point the City became frustrated**  
 20 **with the amount of time it was taking and**  
 21 **decided to just go ahead and send the modeling**  
 22 **work that had been done to date to -- to the**  
 23 **District for review and comment.**  
 24 **And if I can find it here real quick, it**  
 25 **would be the one, two, three, fourth paragraph**

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1 **on the first page, this is page 40 of the**  
 2 **exhibit notebook. And I'll just go ahead and**  
 3 **read it, the aquifer model presented in USGS**  
 4 **Scientific Report 2013-5042 has been utilized to**  
 5 **represent the response of the Equus Beds Aquifer**  
 6 **during an eight-year drought. The aquifer has**  
 7 **assumed to start the modeled drought relatively**  
 8 **full, emulating its condition in January 2011.**  
 9 **I -- I maybe misspoke, I said 2010, thinking the**  
 10 **end of 2010 starting water level heads, so**  
 11 **beginning of January 2011.**  
 12 Q. So this is a letter from Alan King. Based on  
 13 your involvement in the history of the inception  
 14 of this AMC proposal, do you know when and why  
 15 the City shifted from looking at 2011 levels and  
 16 shifted to 1998 levels?  
 17 **A. I don't know that I can put my finger on it;**  
 18 **that's when we received the -- the proposal and**  
 19 **then the model, it began at 1998, and the City**  
 20 **had some reasons for changing that. I don't**  
 21 **remember the discussions in between there or if**  
 22 **there were any discussions, but we had, at**  
 23 **least, originally agreed that, again, I'll say**  
 24 **the 2010, let's go ahead and call them the**  
 25 **January 2011 was the -- the appropriate starting**

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1 **water level heads for that drought model.**  
 2 **Especially considering we were going to then**  
 3 **model the 2011 and 2012 drought, so that seemed**  
 4 **to make the most sense.**  
 5 Q. At some point, Mr. Boese, was the District  
 6 essentially excluded from the discussions  
 7 regarding the City's proposal and -- and these  
 8 conversations that were occurring with the  
 9 Division of Water Resources?  
 10 **A. There was many discussions we weren't involved**  
 11 **with that involved the City and the Division of**  
 12 **Water Resources, so I can't pinpoint on what day**  
 13 **we were excluded, although, again, I think the**  
 14 **City became frustrated with the amount of time**  
 15 **the modeling work was taking. I disagree with**  
 16 **that -- with that -- that take by the City,**  
 17 **modeling takes a lot of time, but they decided**  
 18 **to go ahead and just submit the model to us for**  
 19 **review, which we then did and -- and then the**  
 20 **City then proceeded with their proposal.**  
 21 **MR. STUCKY:** May I approach the  
 22 witness?  
 23 **PRESIDING OFFICER:** Yes.  
 24 **BY MR. STUCKY:**  
 25 Q. Mr. Boese, I've handed you what's a copy of a

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1 November 8th, 2016 minutes from an Equus Beds  
 2 groundwater meeting, board meeting; is that  
 3 right?  
 4 **A. That's correct.**  
 5 Q. Are these -- do these represent the official  
 6 minutes of the board meeting that would have  
 7 been adopted by the Board?  
 8 **A. These were adopted by the Board at the next**  
 9 **board meeting, which would have been December,**  
 10 **I'm not sure of the date, December of 2016, and**  
 11 **they are official, they're signed by our Board**  
 12 **of Director's secretary, Jeff Winter.**  
 13 Q. On page 3 of those minutes there's an expression  
 14 of, I guess, a new proposal that was made by Joe  
 15 Pajor as far as the District's involvement in --  
 16 in this whole process. Can you tell us what  
 17 that entails?  
 18 **A. Would you like me to read it or --**  
 19 Q. Yeah, you can read relevant sections.  
 20 **A. Just -- just for clarification, this was in an**  
 21 **agenda item on our board meeting, our monthly**  
 22 **board meeting, it was called ASR Project Update**  
 23 **and Basin Storage Area Water Level Data, so I**  
 24 **updated the Board on what we were working on.**  
 25 **Board member Joe Pajor, which was then a**

1 **City of Wichita employee, I believe he's retired**  
 2 **now, expressed his frustration regarding, quote,**  
 3 **lack of progress on the cooperative effort**  
 4 **between the City of Wichita and the District**  
 5 **regarding evaluating modeling drought conditions**  
 6 **and access to the City's recharge credits, which**  
 7 **he described as, again, quote, leaderless -- a**  
 8 **leaderless process with, again, quote, too much**  
 9 **back and forth. Mr. Pajor then informed the**  
 10 **Board that the City had changed their approach**  
 11 **and that they would go ahead and take the**  
 12 **information that they had to date, that they had**  
 13 **gathered between previous work with the staff,**  
 14 **the District staff and City and go ahead and**  
 15 **send -- compile that data and model and send**  
 16 **that to the District for feedback within a**  
 17 **one-month period.**  
 18 Q. Prior to this decision by the City to move on  
 19 with the proposal and more or less leave the  
 20 District behind, did the District give  
 21 suggestions to the City regarding changes that  
 22 should be made to the proposal?  
 23 **A. Well, just for clarification, at this time there**  
 24 **was -- there was no proposal on -- on the books;**  
 25 **this was just really trying to understand what**

1 document. Do you recall that discussion?  
 2 **A. Yes.**  
 3 Q. Okay. And what we didn't get earlier in this  
 4 hearing was the response of the City to your  
 5 many suggestions, and I -- as we go through, it  
 6 looks like you made a number of suggestions or  
 7 corrections that you proposed with respect to  
 8 the proposal document. What we find here is  
 9 Mr. King's response; is that right?  
 10 **A. Well, I'm just -- I'm just a little bit**  
 11 **confused, this is -- let me look at this real**  
 12 **quick, if you don't mind. Yes, several**  
 13 **suggestions that were made by myself and**  
 14 **questions to the -- to the City.**  
 15 Q. As it's indicated by Mr. King, what was his  
 16 response to your suggestions?  
 17 **A. He didn't respond directly to me but responded**  
 18 **to District staff that said, I am not inclined**  
 19 **to respond to this.**  
 20 **MR. STUCKY:** I move to admit the  
 21 District 73 into evidence.  
 22 **PRESIDING OFFICER:** Any objections?  
 23 GMD 70 -- whoop.  
 24 **MR. MCLEOD:** I just think that the  
 25 witness's characterization of the document

1 **the impacts were to both the aquifer and to the**  
 2 **City's ability to pump recharge credits in a**  
 3 **drought. That's really all this was at the**  
 4 **time.**  
 5 Q. So back at that time, were -- were there  
 6 suggestions being made by the District as far as  
 7 how this proposal could be conceptualized or how  
 8 it could be formulated?  
 9 **A. I don't -- I don't think we were in the**  
 10 **proposal, the City wasn't in a proposal stage**  
 11 **yet, they were really just doing drought**  
 12 **modeling, but we were certainly working very**  
 13 **cooperatively with the City trying to understand**  
 14 **the best way to model that -- those impacts of**  
 15 **the drought.**  
 16 Q. Can you turn with me to Exhibit 73 in your  
 17 notebook?  
 18 **A. Which one is that in, Dave? I got it.**  
 19 Q. V.  
 20 **A. V.**  
 21 Q. Exhibit 73, earlier in this hearing, there was  
 22 an email introduced where you had given a number  
 23 of suggestions to the City regarding their  
 24 proposal document and issues you feel like  
 25 should have been addressed in the proposal

1 should be clarified. I am not seeing where  
 2 this response to staff, to GMD staff.  
 3 **PRESIDING OFFICER:** I'm sorry,  
 4 you're not seeing?  
 5 **MR. MCLEOD:** I'm not seeing where  
 6 this is a response to GMD staff by  
 7 Mr. King. I'm not seeing that.  
 8 **PRESIDING OFFICER:** I think that's  
 9 the point.  
 10 **MR. STUCKY:** Right, there was no  
 11 response to GMD staff, that's our point.  
 12 **MR. MCLEOD:** Okay. So the witness  
 13 is meaning to say there was not a response  
 14 to him or GMD staff?  
 15 **MR. STUCKY:** Right, yes, that's why  
 16 we're introducing it. I would move to  
 17 admit Exhibit 73.  
 18 **PRESIDING OFFICER:** GMD 73 will be  
 19 admitted.  
 20 **BY MR. STUCKY:**  
 21 Q. Earlier there were also some emails that were  
 22 identified, Mr. Boese, where you gave  
 23 suggestions with respect to keeping the aquifer  
 24 neutral with regard to the City's proposal. Do  
 25 you recall some of those emails?

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1 **A. Yeah, that -- that was part of this email that**  
 2 **we just discussed.**  
 3 Q. And it was also involved -- it was part of  
 4 earlier emails as well, is that right, the idea  
 5 of keeping the aquifer neutral?  
 6 **A. I guess I'm just a little bit lost, can you --**  
 7 Q. Well, let me just zero in then.  
 8 **A. Okay.**  
 9 Q. As it relates to Exhibit 73, is there a  
 10 discussion or a request by you to keep the  
 11 aquifer neutral?  
 12 **A. I -- I forwarded to the City, and also I should**  
 13 **note also I -- this email also went to Division**  
 14 **of Water Resources, David Barfield and Lane**  
 15 **Letourneau, as well as the City's consultants,**  
 16 **Brian Meier with Burns & McDonnell. I was**  
 17 **forwarding the City and DWR some concepts that I**  
 18 **was considering and asking if they would**  
 19 **consider those. These were outside of the scope**  
 20 **of my board, my board had not at this time moved**  
 21 **to send these forward, although eventually we**  
 22 **did, and we can talk about that later.**  
 23 **Again, the proposal had been submitted, I**  
 24 **was reviewing the proposal, I had some -- some**  
 25 **concerns about aquifer maintenance credits and**

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1 **how that could fit into proper management of the**  
 2 **groundwater resources, which is -- which is what**  
 3 **I am in charge of obviously.**  
 4 Q. What does it mean to keep the aquifer neutral?  
 5 **A. In this sense for water, withdrawn water would**  
 6 **have to be put back in, so that way the City**  
 7 **would not be expanding any additional divergence**  
 8 **from the aquifer.**  
 9 Q. Is it your -- still your belief that the City's  
 10 proposal should aspire to keeping it aquifer  
 11 neutral?  
 12 **A. Yes. And I should add that this was not**  
 13 **necessarily meaning I was supporting the**  
 14 **proposal or in opposition to the proposal at the**  
 15 **time or that my concepts were even legal. They**  
 16 **were conceptual ideas that I was willing to**  
 17 **discuss with the City and their consultants and**  
 18 **the Division of Water Resources.**  
 19 Q. At some point, did you suggest the concept of a  
 20 multi-year flex account to the City as a  
 21 possibility that should be discussed?  
 22 **A. We -- yes, myself and my staff hydrologist**  
 23 **brought that up more than once.**  
 24 Q. What was your response to that suggestion?  
 25 **A. What was the City's response or my response?**

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1 Q. The City's response to your -- to your request  
 2 to discuss the concept of a MYFA?  
 3 **A. I would characterize it as not generally**  
 4 **acceptable. I don't know that they ever did**  
 5 **check on it, but we did obviously offer to help**  
 6 **in any way that would be possible to look at**  
 7 **that multi-year flex account option.**  
 8 Q. Mr. Boese, as this proposal was unfolding, were  
 9 there legal questions that you had, in other  
 10 words where you questioned the legality of the  
 11 City's proposal?  
 12 **A. Yes.**  
 13 Q. I'd ask that you turn to Exhibit 30. Exhibit 30  
 14 may have already been introduced, I don't -- I  
 15 don't recall, but it's a letter from  
 16 Mr. Barfield including a draft order; is that  
 17 right?  
 18 **A. Might give me a minute, Dave. This is an**  
 19 **undated letter, which I think Mr. Barfield has**  
 20 **mentioned before, he failed to date this letter,**  
 21 **but it was to both myself and Mr. King with the**  
 22 **City of Wichita. What was your question, Dave?**  
 23 Q. What was the purpose of this letter as shown in  
 24 Exhibit 30, and is it one that the District  
 25 received, is it a letter that you actually

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1 received?  
 2 **MR. MCLEOD:** I'm going to object  
 3 'cause Counsel is asking the purpose of a  
 4 letter the witness didn't write.  
 5 **MR. STUCKY:** Well, I guess I can --  
 6 it's a matter of whether we want to speed  
 7 this hearing process up. I can ask him to  
 8 read specific lines of the letter, if  
 9 that's a helpful exercise, but I was trying  
 10 to speed this process up just a little bit,  
 11 if we could.  
 12 **PRESIDING OFFICER:** Could you  
 13 rephrase in a way with what he would know?  
 14 **BY MR. STUCKY:**  
 15 Q. Mr. Boese, you received this letter; is that  
 16 correct?  
 17 **A. Yes.**  
 18 Q. And as you read this letter, how did you  
 19 understand this letter, what did you understand  
 20 this letter to be saying to you?  
 21 **A. There are several things. I think the main**  
 22 **point of this letter was a -- the chief**  
 23 **engineer, Mr. Barfield, was sending out a draft**  
 24 **order of approval for review and comment by, I**  
 25 **believe, both the GMD2, the District, and the**

1 **City of Wichita. I think that was the main --**  
2 **and then there's also other information in that**  
3 **letter. It's a fairly lengthy letter, but I**  
4 **think the main -- the main goal of that letter**  
5 **was to provide the City and the District with**  
6 **draft orders of approval for us to review and**  
7 **comment on.**

8 **MR. STUCKY:** I move to admit the  
9 District's 30.

10 **PRESIDING OFFICER:** Any objections?

11 **BY MR. STUCKY:**

12 Q. Moving along --

13 **PRESIDING OFFICER:** I'm sorry, GMD  
14 30 will be admitted.

15 **MR. STUCKY:** Thank you, sorry.

16 **BY MR. STUCKY:**

17 Q. Moving along to Exhibit 31 in your notebook,  
18 what is Exhibit 31?

19 **A. This is a letter dated April 27, 2018 to the**  
20 **chief engineer, David Barfield, from the**  
21 **District, signed by myself, based on Board**  
22 **action at the District Board of Directors April**  
23 **19, 2018 letter. It was in response to the**  
24 **letter from Mr. Barfield that we just discussed,**  
25 **it was -- included four -- four items. One was**

1 **our review and comments regarding the draft**  
2 **conditions that Mr. Barfield had -- had sent**  
3 **previously, review and comments regarding the**  
4 **draft proposed replacement findings and order.**  
5 **Attachment C was AMC legal questions and**  
6 **comments, and attachment D was possible AMC**  
7 **accumulation and use policy considerations. And**  
8 **my board of directors -- let me read this letter**  
9 **real quick. Yeah, the Board passed a motion to**  
10 **send these comments and other questions to the**  
11 **chief engineer, and the City was copied on that**  
12 **letter.**

13 Q. So with respect to attachment A, was this an  
14 attempt by the District to give feedback or  
15 comments on several aspects of the City's AMC  
16 concept?

17 **A. Of the entire proposal.**

18 Q. Okay.

19 **A. AMC and minimum index levels, lowering of the**  
20 **minimum index levels.**

21 Q. What types of concerns were identified in  
22 attachment A in this letter that you sent to  
23 the -- to Mr. Barfield?

24 **A. It would take sometime to go through this, which**  
25 **we certainly can, but it's everything in red.**

1 **We had a lot of concerns, a lot of questions.**  
2 **If you wanted to give me five minutes, I could**  
3 **review this again, but there was several**  
4 **concerns with both lowering of the index level**  
5 **and with AMCs.**

6 Q. Have a lot of those concerns also been discussed  
7 in this hearing?

8 **A. Yes.**

9 Q. Let's turn to attachment B. You said that  
10 attachment B was -- was further comments  
11 regarding the proposed replacement findings and  
12 order for ASR Phase II; is that right?

13 **A. Yes.**

14 Q. And so you identified some concerns with those  
15 also shown in attachment B; is that right?

16 **A. Yes. Again, everything in red were -- were**  
17 **comments that I presented to my board and the**  
18 **Board made a motion to forward on to**  
19 **Mr. Barfield.**

20 Q. So in other words, for example, if there's a  
21 comment in red addressing the concept regarding  
22 passive recharge credits, for example, as shown  
23 at the start, kind of in the middle of  
24 attachment B, at the beginning of attachment B,  
25 those would have been your comments in red?

1 **A. They were my comments approved by the Board.**

2 Q. And so you -- you had concerns early on about  
3 this concept of passive recharge credits; is  
4 that right?

5 **A. Yes.**

6 Q. And in attachment C, you presented to  
7 Mr. Barfield concerns with the legality of the  
8 City's proposal; is that right?

9 **A. Yes.**

10 Q. With regard to these concerns with the legality  
11 of the City's proposal, are those still your  
12 opinions that are, in fact, rendered in your  
13 expert report today?

14 **A. Yes.**

15 Q. What is attachment D again of this letter?

16 **A. Attachment D was -- just remember we talked a**  
17 **little bit ago about the email that Mr. King**  
18 **advised, I think, or that stated he was inclined**  
19 **not to respond to, these were some of my**  
20 **thoughts on AMC accumulation and use, policy**  
21 **considerations, how possibly the AMCs could**  
22 **be -- could be considered again, not necessarily**  
23 **looking at the -- at the statutes and the**  
24 **regulations that may need to be changed to allow**  
25 **them but ways that perhaps we could find AMCs**

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1 **acceptable.**  
 2 Q. So basically this, if you will, was a peace  
 3 offering from the District or an attempt to try  
 4 and see what could be done to find a middle  
 5 ground with the City, is that what this was?  
 6 **A. I think you could characterize that. It was --**  
 7 **it was my attempt to properly manage the**  
 8 **groundwater resource while still providing the**  
 9 **ability for the City to develop recharge**  
 10 **credits.**  
 11 Q. And these suggestions were what were effectively  
 12 ignored by Mr. King; is that right?  
 13 **A. Yes.**  
 14 **MR. STUCKY:** Move to admit the  
 15 District's 31 into evidence.  
 16 **PRESIDING OFFICER:** Any objections?  
 17 District's 31 will be admitted.  
 18 **BY MR. STUCKY:**  
 19 Q. Please turn to Exhibit 32 in that same notebook.  
 20 What is Exhibit 32?  
 21 **A. This is a letter to Mr. Barfield dated May 22nd,**  
 22 **2018, and it is - let's see who signed it here**  
 23 **from the City of Wichita - signed by Alan King**  
 24 **from the City of Wichita.**  
 25 Q. And just in general, who was Mr. King responding

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1 to or writing to as he wrote this letter?  
 2 **A. He was responding to Mr. Barfield, the chief**  
 3 **engineer.**  
 4 Q. And he addresses some concerns that were raised  
 5 with the proposal and discusses those in this  
 6 letter, whose concerns is he discussing in this  
 7 letter?  
 8 **A. I'm sorry, can you -- who was Mr. King ...**  
 9 Q. Yeah. Mr. King is addressing a few different  
 10 considerations or concerns that were raised with  
 11 the proposal. Were those concerns raised by  
 12 Mr. Barfield, or were they concerns raised by  
 13 the District? Or do you know?  
 14 **A. I believe they're responding to both our**  
 15 **concerns and maybe some questions that**  
 16 **Mr. Barfield had at the time. Not entirely sure**  
 17 **but it looks like a lot of it is responding to**  
 18 **some of the District's concerns, but there may**  
 19 **be some mixed in there with Mr. Barfield's**  
 20 **concerns.**  
 21 **MR. STUCKY:** And I don't recall,  
 22 this may have been admitted by the City,  
 23 but in an abundance of caution, I'm going  
 24 to move to admit the District's Exhibit 32.  
 25 **PRESIDING OFFICER:** Any objections?

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1 District 32 is admitted.  
 2 **BY MR. STUCKY:**  
 3 Q. Finally turn in your notebook to Exhibit 33,  
 4 what is Exhibit 33?  
 5 **A. This is a letter dated June 1st, 2018 to the**  
 6 **Groundwater Management District No. 2, in care**  
 7 **of myself, and to the City of Wichita.**  
 8 Q. And as you read this letter, how did you  
 9 interpret this letter from Mr. Barfield?  
 10 **A. Yeah, thank you for clarifying, I failed to**  
 11 **mention it was signed by Mr. Barfield.**  
 12 **This is in response to the letter that we**  
 13 **looked at before that was -- that was forwarded**  
 14 **by myself at my board's request regarding the**  
 15 **review that was dated April, look at the date**  
 16 **here real quick, it was dated April 27, 2018,**  
 17 **this is Mr. Barfield's response to that. In**  
 18 **particular, this addresses primarily or mostly**  
 19 **the AMC and his belief that the AMC concept was**  
 20 **legal and was a functional equivalent of a**  
 21 **recharge credit.**  
 22 **MR. STUCKY:** I move to admit the  
 23 District's Exhibit 33.  
 24 **MR. OLEEN:** I don't really have an  
 25 objection, I just wanted to point out this

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1 exhibit is a duplicate of DWR Exhibit 1,  
 2 for the record.  
 3 **PRESIDING OFFICER:** Yeah, I was  
 4 going to mention that, so we'll admit it,  
 5 the District Exhibit 33 is admitted; it is  
 6 a duplicate of the front part of DWR 1.  
 7 **MR. OLEEN:** Thank you. And  
 8 actually, Madam Officer, I hope that DWR's  
 9 Exhibit 1 contains the entirety of what has  
 10 been admitted GMD Exhibit 33. My copy  
 11 does; I hope yours does too.  
 12 **BY MR. STUCKY:**  
 13 Q. Mr. Boese, yesterday -- oop.  
 14 **PRESIDING OFFICER:** I'm sorry.  
 15 **MR. STUCKY:** Sorry, I thought that  
 16 was editorial.  
 17 **PRESIDING OFFICER:** Well, my copy of  
 18 Exhibit 1 seems to be thinner than --  
 19 **MR. OLEEN:** Is it printed front and  
 20 back where GMD's is --  
 21 **PRESIDING OFFICER:** Oh, that would  
 22 explain it. Okay, thank you. Sorry. Go  
 23 ahead.  
 24 **BY MR. STUCKY:**  
 25 Q. Mr. Boese, it's already been brought up in this

1 hearing some emails and some correspondence from  
2 the District, and without having to engage in  
3 that entire discussion again, would you agree  
4 that early on the District identified some  
5 errors in the City's proposal in the numbers  
6 that they used in their tables?

7 **A. Yes.**

8 Q. And would you agree with what the prior record  
9 is, that you pointed out those errors early on  
10 in this whole discussion process, long before we  
11 were in these hearings, would you agree with  
12 that?

13 **A. Yes.**

14 Q. And would you also agree with the prior  
15 acknowledgment that you never received a  
16 response from the City regarding the errors that  
17 you pointed out, is that also agreed -- do you  
18 agree with that?

19 **A. I think that's mostly true. I do -- I do  
20 remember, since I wasn't on the stand before, I  
21 couldn't -- I couldn't interject, I do remember  
22 at least one typographical error that I thought  
23 I found, I had pointed out, I believe, to  
24 Mr. Clement, and I believe he responded with  
25 thanks, but it was never up -- I mean, it was**

1 **However, starting at the 1998 levels, at a lower  
2 level, I'm not sure that we now need that big of  
3 a contingency.**

4 Q. So in other words, to the extent you suggested a  
5 contingency that would have been greater than,  
6 let's say, 5 feet or 10 feet as suggested by  
7 Mr. McCormick, you're saying that those  
8 discussions occurred in the context of when the  
9 City first came to you and suggested that we  
10 were going to utilize the 2010 starting heads?

11 **A. That's my recollection --**

12 Q. Or 2011 starting heads, to clarify the record?

13 **A. That's my recollection. Again, we -- we met so  
14 many times and talked about so many things, I  
15 think it was a mischaracterization by  
16 Mr. McCormick by stating that I suggested they  
17 have a 10-foot contingency in this proposal. We  
18 did certainly talk about modeling errors and  
19 bracketing, plus or minus sort of elevations.**

20 Q. To the extent it was suggested by Mr. McCormick  
21 that was your position, is it your position that  
22 as we use the 1998 levels in the City's  
23 proposal, is it now your position that we need a  
24 10-foot contingency in their proposal?

25 **A. I don't believe that we need a 10-foot. If you**

1 **never updated in the proposal. So I wanted to  
2 make that clear, I do believe Mr. Clement  
3 responded to one of my pencil typo questions.**

4 Q. Mr. McCormick indicated that he thought it was  
5 possible that you suggested the 10-foot  
6 contingency. Do you recall Mr. McCormick's  
7 suggestion in that regard?

8 **A. Yes.**

9 Q. Do you recall any of the discussions with the  
10 City regarding the contingency, and can you tell  
11 us what the context would have been with respect  
12 to those discussions and whether or not you  
13 suggested a 10-foot contingency?

14 **A. My recollection is when we were doing some of  
15 the modeling, we talked about, you know, plus or  
16 minuses, you know, what -- models are never  
17 perfect, you can have a few feet plus or minus.  
18 And since we were using that 2010 starting water  
19 level head, it did make some sense to have sort  
20 of a plus or minus because the aquifer could be  
21 a little higher, could be a little lower.**

22 **I think Mr. McCormick mischaracterizes that  
23 I suggested a 10-foot contingency, but we did  
24 talk about the bracketing, you know, you could  
25 have a plus or minus water level elevation.**

1 **look at some of those results between the 1993  
2 and the new minimum index level, they may be a  
3 foot or 2 feet. To then have a 10-foot  
4 contingency seems quite odd that the contingency  
5 would be much different -- or much larger than  
6 the actual correction that's being made. Some  
7 of those, and we can go through those in detail,  
8 some of them are -- the model results were  
9 actually better than the existing so then we  
10 added the contingency. I don't agree that we  
11 need a 10 foot and certainly not a 20 or 23 in  
12 some aspects.**

13 Q. As you turn to Exhibit 1, which is the City's  
14 proposal, tell me what you're looking at to  
15 guide the discussions with respect to the  
16 contingency.

17 **A. I'm looking at table 2-11 on page 2-25, which is  
18 a table for the 38 index cells, that has the  
19 existing minimum index level, again we'll keep  
20 calling it the 1993 level, the proposed level --  
21 I'm sorry, I should have been looking at table  
22 2-10 on page 2-24, I apologize. Again, this is  
23 a similar table for the 38 index wells, shows  
24 what the drought elevation level showed, what  
25 the existing level, 1993 level, currently is.**

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1 Q. And as you suggested that the contingency should  
 2 be less than 10 feet, tell us how your  
 3 conceptualization of that relates to this table.  
 4 **A. Well, I'll give you some examples, I think**  
 5 **that'd be the easiest thing. If you look at**  
 6 **IW5, the minimum drought model elevation is**  
 7 **1408 feet, and I'm going to round these off a**  
 8 **little bit, make it easier, the existing level**  
 9 **is 1407, so we're talking a foot difference.**  
 10 **However, the contingency then is 10 feet, so**  
 11 **it's ten times greater than the difference.**  
 12 **Seems odd that your contingency would be an**  
 13 **order of magnitude larger than -- than the**  
 14 **correction that's being requested -- or the**  
 15 **modification that's being requested.**  
 16 Q. The contingency was called a safety net by  
 17 Mr. Barfield, and that terminology was also used  
 18 by one of the City's experts when I asked a  
 19 question. Do you recall that?  
 20 **A. Yes.**  
 21 Q. So you're saying that as far as a safety net  
 22 goes or a margin -- margin of error, if you  
 23 will, we don't need one that's ten times what we  
 24 would expect from the modeled results. Is that  
 25 what you're saying?

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1 **A. It seems excessive, especially since we're**  
 2 **already starting at the 1998 levels, which are**  
 3 **already a depressed level, it would seem odd**  
 4 **then to add another 10 foot when you're already**  
 5 **starting at a low level.**  
 6 Q. And I'm simply asking you these questions 'cause  
 7 it was suggested that you stated that these  
 8 contingencies were adequate and, in fact, you  
 9 came up with the ideas for these contingencies.  
 10 Based on that suggestion having been made, is it  
 11 now your position that the contingencies can be  
 12 less in the proposal, to the extent you ever  
 13 made that prior statement?  
 14 **A. I would certainly -- certainly think so.**  
 15 Q. Mr. Boese, what is the concept of a spacing  
 16 waiver?  
 17 **A. The District has a spacing regulation under**  
 18 **K.A.R. 5-22-2 which requires a minimum spacing**  
 19 **distance on an application, 660 feet to a**  
 20 **domestic well, 1320 feet to a non-domestic well.**  
 21 **I should go ahead and add there's some caveats**  
 22 **to that. From a well battery, you add 300 feet;**  
 23 **and then there's an enhanced well spacing area**  
 24 **in Reno County, which we probably don't need to**  
 25 **get into detail since we're not in Reno County,**

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1 **which actually requires greater well spacing.**  
 2 **If an applicant is proposing a well that**  
 3 **does not meet those regulations, they can ask**  
 4 **for an exception from the District Board of**  
 5 **Directors. The District Board, as we noted**  
 6 **earlier, can then make that recommendation to**  
 7 **the Division of Water Resources for an exception**  
 8 **to that regulation if the Board so chooses.**  
 9 Q. And what did you say that regulation was?  
 10 **A. K.A.R. 5-22-2.**  
 11 Q. Okay. Can you turn to Exhibit 27 for me in the  
 12 District's notebooks? What is Exhibit 27?  
 13 **A. This is a memorandum of understanding between**  
 14 **the District and the City of Wichita for ASR**  
 15 **Phase II.**  
 16 **MR. STUCKY:** And do we have an  
 17 agreement on the record that we're taking  
 18 judicial notice of this document, that we  
 19 don't need to admit it, is that -- there's  
 20 an agreement to that already, right?  
 21 **A. I would note that mine -- mine has an exhibit**  
 22 **sticker on it already, so it may have been**  
 23 **admitted, I'm not 100 percent sure.**  
 24 **MR. OLEEN:** I think it might have  
 25 been admitted, but if not, I have an

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1 agreement to that.  
 2 **MR. STUCKY:** Okay.  
 3 **PRESIDING OFFICER:** Yeah, I thought  
 4 I'd already administratively noticed it,  
 5 but if I haven't, I am now.  
 6 **MR. STUCKY:** Okay.  
 7 **BY MR. STUCKY:**  
 8 Q. With respect to Exhibit 27, what does it tell us  
 9 about spacing waivers? And specifically I'd ask  
 10 that you turn to B1 on page 4.  
 11 **A. This is a component of the MOU where the**  
 12 **District and the City agree that the District**  
 13 **Board would recommend a waiver of the well**  
 14 **spacing requirements for any City ASR well that**  
 15 **does not meet the spacing requirements. There**  
 16 **is a little bit of a caveat there, it says, that**  
 17 **the GMD2 would grant that based on a finding the**  
 18 **conditions set out above do exist and that**  
 19 **granting of the waiver will not unreasonably**  
 20 **impair the public interest. Those conditions**  
 21 **that were set above were that the well, the**  
 22 **proposed well would be used both for**  
 23 **artificial -- or for aquifer recharge as defined**  
 24 **by regulation and withdrawal of water for an**  
 25 **authorized use. So it made it narrow that it**

1 **had to be an aquifer storage and recovery well,**  
2 **a well that water is injected into and then**  
3 **withdrawn later.**  
4 Q. And you were involved in the development of this  
5 MOU; is that right?  
6 **A. Yes.**  
7 Q. And so as you're interpreting this MOU, that's  
8 also based on your discussion or involvement in  
9 having developed this MOU; is that right?  
10 **A. Yes.**  
11 Q. Now keep that in mind, let's turn to Exhibit 53,  
12 which has already been admitted into evidence.  
13 What is Exhibit 53?  
14 **A. Just waiting for everybody to catch up here. 53**  
15 **is a letter from the City of Wichita - I believe**  
16 **it was signed by David Warren, but let me check**  
17 **real quick. It was - dated October 10th, 2008,**  
18 **whereas the City was requesting spacing -- or**  
19 **that the District would grant a well spacing**  
20 **exception or exemption for several of the City**  
21 **ASR Phase II applications, looks like nine of**  
22 **them, nine of those applications.**  
23 Q. In this letter, toward the end of the letter  
24 there's some conditions under which the City is  
25 asking for waivers from this well spacing; is

1 been marked as well.  
2 **A. Yeah.**  
3 Q. Okay. Exhibit 57, we already had testimony that  
4 these are -- represent a series of letters that  
5 were sent from the City of Wichita to the  
6 domestic well owners asking for spacing waivers  
7 or consent forms. Is that -- is that what these  
8 letters were?  
9 **A. That's correct, the City sent these letters to**  
10 **domestic well owners that were located within**  
11 **660 feet of certain ASR Phase II applications**  
12 **asking those owners if they would sign a consent**  
13 **form to allow that -- that ASR well to be**  
14 **located closer than the regulations allow.**  
15 Q. There's already been some testimony to this  
16 effect, but what conditions were assured to  
17 these domestic owners as they were asked to sign  
18 off on these waivers?  
19 **MR. MCLEOD:** I'm going to object to  
20 the characterization in the sentence, I  
21 think we developed in prior testimony there  
22 are no mentions of any assurances in any of  
23 these letters.  
24 **BY MR. STUCKY:**  
25 Q. Well, let me just ask this, I'll rephrase, what

1 that right? And we find some of that in the  
2 last paragraph, correct?  
3 **A. Yes.**  
4 Q. What were some of the conditions under which the  
5 City of Wichita asked for well spacing waivers?  
6 **A. That the City would not be able to withdraw**  
7 **their aquifer storage and recovery credits if**  
8 **the water levels were below the 1993 levels.**  
9 Q. Now, you would have had a discussion with the  
10 District Board as they were considering these  
11 spacing waivers and also as it related to the  
12 City of Wichita's letter, would you not have had  
13 those discussions?  
14 **A. Yes.**  
15 Q. When you recommended to the GMD Board to grant  
16 these spacing waivers, did you explain it to the  
17 GMD Board in the context of the fact that there  
18 wouldn't be a drop below the 1993 levels?  
19 **A. I'm sure I did.**  
20 Q. Please turn to Exhibit 57 in that same notebook.  
21 And, Mr. Boese, did Exhibit 53 -- it had an  
22 exhibit sticker on it already, didn't it? Is  
23 that correct?  
24 **A. It did.**  
25 Q. Okay. Let's turn to Exhibit 57, that's already

1 do you find significant about the nature of this  
2 letter, Mr. Boese?  
3 **A. That the withdrawal of the recharge credits**  
4 **would not be permitted if water levels are below**  
5 **the 1993 minimum index levels that are**  
6 **established by the ASR permit. So the City was**  
7 **stating that they would not withdraw --**  
8 Q. And are you looking at the last sentence of the  
9 first paragraph?  
10 **A. Yes.**  
11 Q. Will you read it for the record?  
12 **A. Withdrawals will not be permitted if water**  
13 **levels are below the 1993 baseline established**  
14 **by the ASR permit.**  
15 Q. And so that line was put in all the letters that  
16 were sent to these well holders; is that right?  
17 **A. It does appear to be the same -- same letter to**  
18 **all of them, yes.**  
19 Q. Based on your experience, or 28 years of  
20 experience in the District, you had the  
21 opportunity to ask -- to help with spacing  
22 waivers and aid applicants with spacing waivers;  
23 is that -- is that true?  
24 **A. Yes.**  
25 Q. Okay. If you were interpreting what that meant,



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1 if you were advising one of these well holders  
 2 what it meant in this letter that withdrawals  
 3 will not be permitted if water levels are below  
 4 the 1993 baseline, what would you tell one of  
 5 these water right holders?  
 6 **A. I think, first of all, I should make it clear**  
 7 **that I never asked a well owner, a domestic well**  
 8 **owner to sign consent forms. Oftentimes the**  
 9 **applicant does. We would not do that on a staff**  
 10 **level where I would ask a domestic well owner to**  
 11 **sign a consent form, that's up to the applicant**  
 12 **to ask. We do have a consent form that**  
 13 **applicants can use.**  
 14 **So first of all, I would advise them to**  
 15 **review the request considerably. They do not**  
 16 **have to sign it, they're not required to sign**  
 17 **it. If they ask specific questions, I would say**  
 18 **that the City could not withdraw recharge**  
 19 **credits below the 1993 levels.**  
 20 Q. Okay. And if the applicant asked you, if I sign  
 21 off on this waiver, do I have some assurance  
 22 that we're not going to drop below those 1993  
 23 levels, what would you tell the applicant?  
 24 **MR. OLEEN:** I think I want to  
 25 object, I think it's speculative, he said

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1 he never -- he said he never asked any of  
 2 these well owners to sign any waivers so --  
 3 and we're talking about something that's in  
 4 the past. So it doesn't matter what he  
 5 says now he would have told these people  
 6 that he testified he never talked to. So  
 7 speculative and irrelevant.  
 8 **PRESIDING OFFICER:** I think what  
 9 he's getting at is if an applicant came to  
 10 him having received one of these and said,  
 11 Mr. Boese, what does this mean, then that's  
 12 what he's being asked.  
 13 **MR. OLEEN:** Well, if one did, then  
 14 it's relevant. If one never asked him  
 15 that, I don't see how it matters what he  
 16 would have said because he never said it.  
 17 **MR. STUCKY:** The relevance is  
 18 whether or not these spacing waivers are  
 19 still applicable to the proposal that's  
 20 before us today, that's the relevance, so  
 21 it's highly relevant in my view.  
 22 **MR. OLEEN:** And -- sorry, go ahead.  
 23 **MR. MCLEOD:** I think I'm  
 24 understanding where Mr. Oleen is going, and  
 25 I think I share this concern that what's

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1 happening here is Counsel's trying to  
 2 convert these into assurances, although  
 3 they don't say they're assurances, the  
 4 author of the letter didn't say they were  
 5 assurances, and his most recent effort to  
 6 do that is to cast it in this mold of,  
 7 well, if any of these people had ever  
 8 asked, would Mr. Boese have told them these  
 9 were assurances. I don't think Mr. Boese  
 10 gets to interpret the letter, and I think  
 11 it is doubly irrelevant, as Mr. Oleen said,  
 12 because none of these people, in fact, ever  
 13 asked him and hence he never gave them  
 14 advice about whether these were assurances  
 15 and hence they never relied on the  
 16 interpretation that he never gave them  
 17 about whether these were assurances.  
 18 **MR. STUCKY:** I'll just ask a new  
 19 question. I think it's strongly already  
 20 implied from these letters, so I'll just  
 21 ask a new question.  
 22 **BY MR. STUCKY:**  
 23 Q. Mr. Boese, do you believe that new letters  
 24 should be sent to well owners in the Equus Beds  
 25 Aquifer to ask for new spacing waivers from the

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1 City's new aquifer maintenance credit proposal  
 2 based on the fact that we're going below the  
 3 1993 levels in their proposal?  
 4 **A. Yes, 'cause I don't think the statements in**  
 5 **these letters that were sent would now be**  
 6 **correct. And for a point of record, because**  
 7 **I -- I do remember, I did talk to several of**  
 8 **these people and they did call. I can't -- I**  
 9 **can't produce a record of that right now, but --**  
 10 Q. You can testify, go ahead and testify to that.  
 11 **A. Well, I -- I can't remember my entire**  
 12 **discussion, but they received these letters. I**  
 13 **can tell you this Kelly Willmore, which is the**  
 14 **third letter, I vividly remember talking to her.**  
 15 **I believe I talked to Mrs. Heidebrecht on the**  
 16 **next one, and I also believe that I talked to**  
 17 **Mrs. Decker or perhaps Mrs. Decker's son. So I**  
 18 **did discuss -- I did -- these folks did call me**  
 19 **and ask these questions.**  
 20 Q. Okay. So that erases the objections. Would  
 21 you --  
 22 **MR. MCLEOD:** I'm sorry, it doesn't  
 23 erase the objections unless he specifically  
 24 remembers them asking if these provided  
 25 assurances and he told them that they did

1 provide assurances. That's the only way  
2 that it erases the objection.  
3 **BY MR. STUCKY:**  
4 Q. Did you tell any of these well owners at that  
5 time that an assurance offered by the City  
6 appeared to be that there wouldn't be a drop  
7 below the 1993 levels?  
8 **A. I don't know that I worded -- used the word**  
9 **assurance, but I'm not sure what the difference**  
10 **between the word assurances and will not be**  
11 **permitted are. I mean, I'm -- I'm just guessing**  
12 **I read the last sentence of that letter and**  
13 **discussed it, yes, the City will not be able to**  
14 **withdraw recharge credits below the 1990 (sic)**  
15 **level. Again, I'm not sure what the difference**  
16 **between assurances and not be permitted -- I**  
17 **think not be permitted may actually be stronger.**  
18 Q. Okay. So based on that, do you believe that new  
19 spacing waivers should be sought from well  
20 owners based on the City's aquifer maintenance  
21 credit proposal?  
22 **A. I believe that new spacing waivers should be**  
23 **sought either -- both from the domestic well**  
24 **owners and from the District Board of Directors**  
25 **because they based their decision also on the**

1 about some of the reasons a change application  
2 is needed and some of the reasons a change  
3 application is not applicable. Do you recall  
4 that discussion?  
5 **A. Yeah.**  
6 Q. And on a surface level, do you agree with  
7 some of the statements that were made by  
8 Mr. Letourneau?  
9 **A. I agree with some of the statements made by**  
10 **Mr. Letourneau.**  
11 Q. Would you agree that absent a change  
12 application, you can't change the place of use  
13 or the source of water or the point of  
14 diversion, for example?  
15 **A. You cannot change the source of water; it would**  
16 **be the use made of water, if that's what you**  
17 **meant. To change the use made of water, the**  
18 **point of diversion, or the place of use, you**  
19 **must file a change application.**  
20 Q. And no change app -- would you also agree with  
21 Mr. Letourneau that if you're trying to reduce  
22 the amount of water or you're correcting a  
23 typographical error with the water right that  
24 you don't need a change application at all; is  
25 that right?

1 **City not withdrawing their recharge credits**  
2 **below the 1993 levels.**  
3 Q. So do you believe that the District Board would  
4 have granted the spacing waivers back at that  
5 time, based on your discussions with them, if  
6 they believed that we would in the future drop  
7 below the 1993 levels?  
8 **A. I wouldn't have advised them to do that because**  
9 **it would have been an unknown. Until it was**  
10 **proven by the applicant that no one would be**  
11 **impaired by dropping below the 1993 levels, I**  
12 **would not have made that recommendation to my**  
13 **board to grant the waiver.**  
14 Q. So new spacing waivers need to be sought in both  
15 instances, both with respect to individual well  
16 owners and with respect to District Board  
17 approval; is that right?  
18 **A. That would be -- that would be my**  
19 **recommendation.**  
20 Q. Previously there's been a discussion of a change  
21 application. Change applications are found in  
22 K.S.A. 82a-708(b), and we've already had a lot  
23 of discussion about that; is that right?  
24 **A. Yes.**  
25 Q. And you listened to Mr. Letourneau's discussion

1 **A. That's correct.**  
2 Q. So if you're changing those -- those items that  
3 I mentioned, the place of use, the point of  
4 diversion, one would utilize a change  
5 application; is that right?  
6 **A. That's correct.**  
7 Q. What if you were to actually want to change  
8 other fundamental aspects of a water right,  
9 what would -- what would an applicant have to  
10 do? Would they -- would they be able to do that  
11 with a change application, or is the change  
12 application limited to those items you  
13 mentioned?  
14 **A. The change application is limited to those items**  
15 **that we mentioned, point of diversion, place of**  
16 **use, and use made of water.**  
17 Q. So what if, for example, an applicant came to  
18 you and they said, Mr. Boese I have an  
19 authorized quantity of 2,000 acre-feet and  
20 that's been perfected at that number, I want to  
21 double it to 4,000 acre-feet, what would you  
22 tell the applicant?  
23 **A. I would tell the applicant the only way to**  
24 **increase their appropriation is to file a new**  
25 **water permit application.**

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1 Q. So there's several levels that are created, so  
 2 on one hand if we're making minor changes to a  
 3 water right, such as a typographical error, no  
 4 change application is needed; level two is we're  
 5 trying to change those aspects that you  
 6 mentioned and we would use the change  
 7 application, that's level two; level three, if  
 8 you will, is we're changing the very nature of  
 9 the water right, and a new application is  
 10 needed. Is that what you're saying?  
 11 **A. Yes.**  
 12 Q. Did the City file a new application or a change  
 13 application in this case?  
 14 **A. They did not file a change application. I think**  
 15 **as we discussed previously the City filed, I**  
 16 **believe, 30 new applications that have since**  
 17 **been dismissed. So in relation to what we're**  
 18 **talking about for today's proposal, there was**  
 19 **not a change application or a new application**  
 20 **filed.**  
 21 Q. I would ask that you turn to Exhibit 39 in your  
 22 expert report. Are you there, Mr. Boese?  
 23 **A. Yeah, I'm doing a little housekeeping.**  
 24 Q. Okay.  
 25 **A. I am there, Dave.**

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1 Q. And if you could keep your expert report open in  
 2 front of you in addition to these other  
 3 exhibits. On page 5 of your expert report, you  
 4 render an opinion with regard to different  
 5 requirements the City would need to show with  
 6 respect to both a change application or if there  
 7 was a new application. Is that -- is that what  
 8 you state in your expert report?  
 9 **A. Yes.**  
 10 Q. And it's been discussed, in a nutshell,  
 11 Mr. Boese, what are some of those requirements  
 12 the City would have to show?  
 13 **A. I'm going to go ahead and turn to the K.S.A. so**  
 14 **we can maybe be specific, if that's all right**  
 15 **with you. I can --**  
 16 Q. Please do.  
 17 **A. -- I can recite them off my head for the most**  
 18 **part but just to be specific.**  
 19 Q. And for the record, which K.S.A. are you turning  
 20 to, would that be 82a-708(b)?  
 21 **A. I am. And, again, for reference, K.S.A.**  
 22 **82a-708(b) is -- is the application for change.**  
 23 **There are a number of things, the applicant has**  
 24 **to apply in writing, demonstrate to the chief**  
 25 **engineer the proposed change is reasonable and**

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1 **will not impair existing water rights,**  
 2 **demonstrate that the change relates to the same**  
 3 **source of supply, and then obviously receive the**  
 4 **approval of the chief engineer. And it does go**  
 5 **on to say that the chief engineer shall approve**  
 6 **or reject the application in the same, I'll use**  
 7 **the word manner, it's longer than that, in the**  
 8 **same manner as original application.**  
 9 Q. Is it your belief the City has to show that they  
 10 meet all those requirements with their proposal  
 11 before us?  
 12 **A. Yes.**  
 13 Q. Now, we talked about a change application.  
 14 Similarly, one may request changes to a permit;  
 15 is that right? To a water permit?  
 16 **A. Request a change?**  
 17 Q. An applicant may request changes to a water  
 18 permit at some point, is that -- is that  
 19 something that an applicant might do at some  
 20 point?  
 21 **A. Yes.**  
 22 Q. Tell me what items can be corrected in a water  
 23 permit without any kind of change application or  
 24 otherwise.  
 25 **A. There -- generally, the Division of Water**

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1 **Resources would issue findings and orders or**  
 2 **correctional orders to correct things such as**  
 3 **typos. I'll give you a perfect example. I**  
 4 **think just a week or two ago, we had a**  
 5 **certificate that came into our office on a water**  
 6 **right owner in Reno County, and the Division of**  
 7 **Water Resources had failed to put the section**  
 8 **number on the certificate. And when that**  
 9 **individual water right owner tried to record**  
 10 **that at the register of deeds, he could not**  
 11 **because it didn't have the legal description on**  
 12 **it. So that requires a correctional order or a**  
 13 **new certificate to be issued, that's a good**  
 14 **example.**  
 15 **An applicant can request that the place of**  
 16 **use be reduced, not changed, just reduced;**  
 17 **request that the quantity be reduced; the rate**  
 18 **be reduced. The water right can be divided into**  
 19 **two or more water rights, that can be done with**  
 20 **an order. Some conditions could be added such**  
 21 **as a meter requirement or maybe a monitoring**  
 22 **plan or a conservation plan or -- I think that**  
 23 **would be the main things I'm thinking of off the**  
 24 **top of my head. But, generally, they are minor**  
 25 **in detail and correctional in detail.**

1 Q. Could a change application apply to the permits  
2 that the City has brought before us through this  
3 proposal?

4 **A. No.**

5 Q. And why is that?

6 **A. They're not asking to change the point of  
7 diversion, the place of use, or the use made of  
8 water.**

9 Q. Now, I believe that there were some changes made  
10 to the permits identified in ASR Phase II for  
11 topographical reasons; is that right?

12 **A. Yeah, more correctional actually. Since we're  
13 discussing 1993 water levels, there was a  
14 technical correction made to the 1993 levels; we  
15 didn't change it to a different year, there was  
16 just additional data that was discovered, some  
17 new data, some errors that were made when those  
18 index levels of 1993 levels were established for  
19 some of the cells. So there was a correction  
20 made on that, that was a correctional order that  
21 did that.**

22 Q. So now distinguish between changing a few of the  
23 data points in the topographical information and  
24 perhaps an error in that, distinguish that now  
25 for me with changing from the 1993 level and

1 Q. How would the City have presented its proposal  
2 to have this aquifer maintenance credit adopted,  
3 how should they have presented it?

4 **A. It would have to be done through a new  
5 application, and, first of all, we'd have to  
6 determine if they were legal or not. I mean,  
7 they could file, I guess, without that being  
8 determined, but changing the fundamental part of  
9 a water right cannot be done with a mere  
10 request. And in my opinion, how the City can  
11 obtain recharge credits and when they can use  
12 them are the two most fundamental aspects of  
13 their water -- their ASR water permits.**

14 Q. And so in other words, if we set aside any  
15 concerns with the legality of the AMC proposal,  
16 we set that aside --

17 **A. Uh-huh.**

18 Q. -- theoretically if they were going to try to  
19 change those fundamental aspects of ASR Phase  
20 II, you believe that that would be properly done  
21 through new applications?

22 **A. Yes.**

23 Q. Is one of the considerations with respect to a  
24 new application or with respect to change  
25 application, is one of the things that must be

1 dropping that level, can the City do that  
2 through a change application?

3 **A. I don't believe so.**

4 Q. How would the City go about making that request  
5 properly, based on your 28 years of experience  
6 having worked in your role at the Equus Beds  
7 Groundwater Management District?

8 **A. In my opinion, that's a fundamental change, it  
9 would have to be done through a new application.**

10 Q. Also the same question, and we'll talk about  
11 this in more detail in a moment, but if the City  
12 through this aquifer maintenance credit proposal  
13 is, in fact, not injecting water into the  
14 aquifer anymore, do you believe that the  
15 City's -- so we have the minimum index aspect on  
16 one hand, dropping the minimum index level on  
17 one hand and we have this aquifer maintenance  
18 credit proposal on the other hand, do you think  
19 that the City's aquifer maintenance credit  
20 proposal can be done through merely a change  
21 application?

22 **A. It can't be done through a change application  
23 because it's not -- again, not changing the  
24 point of diversion, place of use, or use made of  
25 water.**

1 looked at safe yield, is that -- is that  
2 something that must be looked at?

3 **A. Yes, with a -- with a new application,  
4 absolutely; with a change application, it sort  
5 of depends on the nature of the change  
6 application. There are some exemptions in the  
7 safe yield, for instance, if -- if the well's  
8 been completed already and they're wanting to  
9 move the well, notice of proof has been properly  
10 filed, it would not have to meet safe yield to  
11 move that well. But, yes, safe yield has to be  
12 considered.**

13 Q. You already indicated when recharge credits  
14 could be withdrawn pursuant to ASR Phase I and  
15 ASR Phase II, and you indicated that if recharge  
16 credits have been accumulated by injecting water  
17 into the aquifer they can only be withdrawn if  
18 we're above those 1993 levels; is that right?

19 **A. That's correct.**

20 Q. So you're saying to change that would require a  
21 brand-new application, is that what you're  
22 saying?

23 **A. Yes.**

24 Q. In your expert report, on page 4 of your expert  
25 report found in 39, you identified some math

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1 errors that were included in the City's proposal  
 2 and some concerns about the contingency, in your  
 3 expert report; is that right?  
 4 **A. Yes.**  
 5 Q. And prior to this -- this hearing process where  
 6 we've all been in the same room, were those  
 7 concerns ever addressed back to you by the City?  
 8 **A. I think other than that I noted I believe**  
 9 **Mr. Clement responded that, you know, thanks for**  
 10 **the catch, but as far as any corrections that**  
 11 **were made to the proposal, I don't believe**  
 12 **any -- any corrections were made. And I think**  
 13 **that was the one time the City responded that I**  
 14 **can remember.**  
 15 Q. At the very beginning of your report, it says,  
 16 the City's proposal advises that the minimum  
 17 index levels should be lowered so that the City  
 18 can withdraw the accumulated recharge credits  
 19 during an extended drought. Let me ask you  
 20 this: Could the City conceivably withdraw the  
 21 aquifer maintenance credits at a time other than  
 22 a drought based on your review of the proposal?  
 23 **A. Yes, there is no -- no specific condition that**  
 24 **would limit that. Although the proposal does**  
 25 **state that's what the needs are for, there is**

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1 **a -- isn't a condition that would restrict only**  
 2 **for drought time removal.**  
 3 Q. Now, with respect to lowering minimum index  
 4 levels as you talk about on page 4 of your  
 5 report, you indicated that you have done work  
 6 with USGS and KGS with regard to migration of  
 7 the chloride plume, have you not?  
 8 **A. Yes.**  
 9 Q. And if you could turn to Exhibit 44 in Volume  
 10 III, the notebook in front of you.  
 11 **A. Okay.**  
 12 Q. What is 44?  
 13 **A. This is a report by the USGS, again titled**  
 14 **Preliminary Simulation of Chloride Transport in**  
 15 **the Equus Beds Aquifer and Simulated Effects of**  
 16 **Well Pumping and Artificial Recharge on**  
 17 **Groundwater Flow and Chloride Transport near the**  
 18 **City of Wichita, Kansas, 1990 through 2008.**  
 19 Q. And I believe that already has an exhibit marker  
 20 on it; is that right?  
 21 **A. I think you introduced it earlier and it was**  
 22 **admitted, but I don't have a marker on it at**  
 23 **this point in time.**  
 24 **MR. STUCKY:** To the extent it  
 25 wasn't, to clarify the record, I am moving

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1 to admit Exhibit 44 if it wasn't.  
 2 **MR. MCLEOD:** What book are we in?  
 3 **MR. STUCKY:** Volume III, Mr. McLeod.  
 4 **MR. OLEEN:** Mr. Stucky, I wrote down  
 5 in my notes that 44 had already been  
 6 admitted.  
 7 **MR. STUCKY:** Thank you, Mr. Oleen.  
 8 **BY MR. STUCKY:**  
 9 Q. Mr. Boese, as you -- you worked with USGS in  
 10 developing this report, I assume that you gained  
 11 some experience with the migration of the  
 12 chloride plume in the Equus Beds Aquifer; is  
 13 that right?  
 14 **A. Yes.**  
 15 Q. And, in fact, the movement of the chloride plume  
 16 in the Equus Beds Aquifer, is that something  
 17 that you personally have been concerned with for  
 18 a long time?  
 19 **A. Yes. Again, this is only -- only talking about**  
 20 **a couple of the chloride plumes. Unfortunately,**  
 21 **we have many more. But, yes, in respect to**  
 22 **this, this is talking about a couple different**  
 23 **plumes.**  
 24 Q. In that report as it relates to the Big Ark and  
 25 the Burrton chloride plume, does it talk about

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1 the fact that movement of the chloride plume  
 2 could be accelerated if the water table drops?  
 3 **A. Yes, it's in relationship to the amount of**  
 4 **pumping. USGS ran multiple scenarios of**  
 5 **different pumping options, some were with no**  
 6 **pumping, some with City pumping, some with City**  
 7 **and irrigation pumping, some with double City**  
 8 **pumping and no irrigation. There's multiple**  
 9 **ones, but, yes, there's -- City ran several**  
 10 **different scenarios and showed what those**  
 11 **impacts on that chloride movement by those**  
 12 **pumping scenarios were.**  
 13 Q. Based on your involvement with these USGS and  
 14 KGS studies that we identified earlier regarding  
 15 migration of the chloride plume, if the City  
 16 drops its minimum index level to a new level and  
 17 is able to recover recharge credits with that  
 18 bottom having been dropped, is it your belief  
 19 that that could have the potential to accelerate  
 20 the movement of the chloride plume?  
 21 **MR. MCLEOD:** I'm going to ask for  
 22 foundation because there still hasn't been  
 23 adequate foundation for the witness to  
 24 answer that question.  
 25 **MR. STUCKY:** And I'm not asking in

1 the context of the City's modeling; I'm  
2 asking in the context of his work with USGS  
3 and KGS. And what he just testified to was  
4 the simple premise that if the water table  
5 is dropped, the water level is dropped in  
6 the aquifer, there's the potential to  
7 accelerate the movement of a chloride  
8 plume, and I'm asking in that context,  
9 based on his understanding, if we drop the  
10 minimum index level and allow the City to  
11 withdraw when that bottom is lowered, and  
12 as a consequence the water table would also  
13 drop, would that have the potential to  
14 accelerate the movement of the chloride  
15 plume? That's my question so ...

16 **MR. MCLEOD:** And I have to point out  
17 at this juncture there are specific pumping  
18 scenarios that the USGS ran in the study in  
19 Exhibit 44 that's before us. And in order  
20 to answer a question as to whether he  
21 thinks that those studies show an impact  
22 from lowering the bottoms below the 1993  
23 levels and allowing AMCs, Mr. Boese would  
24 have had to model those scenarios in order  
25 to compare to the studies that were run.

1 And we haven't had anything to suggest that  
2 that happened. And I think before the  
3 witness can state a belief on what those  
4 USGS pumping scenarios show, he has to be  
5 able to say how those pumping scenarios  
6 relate to what would happen with the  
7 lowering of the index levels and the  
8 granting of AMCs.

9 **MR. OLEEN:** Madam Officer, I join in  
10 the objection also because there's a big  
11 report here, and I don't think it's enough  
12 foundation to just say I have -- I have  
13 some involvement with the creation of this  
14 report, therefore, do you agree that  
15 generally this 70-some-page report says X  
16 or Y. I would like to see some specific  
17 references to what this report supposedly  
18 says and whether it actually says what  
19 Mr. Boese is supposedly qualified to say  
20 that it says.

21 **BY MR. STUCKY:**

22 Q. Mr. Boese, do you have -- I'm going to ask a new  
23 question. Mr. Boese, do you have familiarity  
24 with the pumping scenarios as they're outlined  
25 in this USGS report?

1 **A. Yes.**

2 Q. Can you walk us through the pumping scenarios as  
3 they're outlined in this USGS report and  
4 indicate how they apply to the City's modeling  
5 and the migration of the chloride plume?

6 **A. Sure. This report is a large report, I don't  
7 disagree with that, there was a lot of work put  
8 into it. The City ran -- I mean, I'm sorry, the  
9 USGS ran, I believe six, and I'm going to look  
10 at it real quick to refresh my memory, six  
11 different pumping scenarios. One was just using  
12 the existing 1990 to 2008 pumping and artificial  
13 recharge conditions, that was the baseline.  
14 This is the pumping and the recharge in the  
15 Wichita well field area. Then they did a no  
16 pumping in the model area, so no pumping being  
17 taken out, no water being taken out; double  
18 Wichita municipal pumping from the Wichita well  
19 field with existing irrigation pumping; existing  
20 Wichita municipal pumping with no irrigation  
21 pumping in the modeled area; double Wichita  
22 municipal pumping in the Wichita well field and  
23 no irrigation pumping in the modeled area; and  
24 then increasing artificial recharge in the Phase  
25 I ASR project site by 2300 acre-feet. They ran**

1 **all those scenarios and evaluated them against  
2 that baseline to see if chloride movement from  
3 both the Burrton plume and the Arkansas River  
4 corridor saltwater contamination, if that  
5 increased the movement, the rate of movement of  
6 those chloride plumes.**

7 **So I could go through each one of those,  
8 but I think the easiest thing in relationship to  
9 what Mr. Stucky asked me would be to skip to the  
10 double Wichita municipal pumping, existing  
11 irrigation pumping scenario, which is the worst  
12 case of all those. I think we could all agree  
13 that's the most pumping. And that did increase  
14 the movement both from the Burrton chloride  
15 plume and the Arkansas River saltwater  
16 contamination, it did increase that movement  
17 into the Wichita well field area. And it  
18 increased it the most out of those scenarios.**

19 Q. So based on your understanding of those  
20 outcomes, how does that apply in your view to  
21 the City's concept of lowering the minimum index  
22 levels?

23 **A. Well, obviously they used -- the USGS used  
24 double Wichita municipal pumping and existing  
25 irrigation pumping, that would obviously lower**

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1 the water table. Lowering the water table  
 2 increased the movement of the chloride plumes  
 3 from both locations the most out of all those  
 4 scenarios. And I should add that the only way  
 5 Wichita could probably do double municipal  
 6 pumping would be to pump recharge credits also.  
 7 Q. So how does that apply to the concept of  
 8 lowering the minimum index level as seen in the  
 9 City's proposal and your concern with chloride  
 10 movement regarding that?  
 11 **A. Well, again, the increased pumping would lower**  
 12 **the water tables; if the City was allowed to**  
 13 **withdraw credits below the 1993 level, that**  
 14 **obviously increases the hydraulic gradient, just**  
 15 **as this scenario did. Increasing the hydraulic**  
 16 **gradient increases the rate of movement of the**  
 17 **saltwater contamination.**  
 18 Q. So based on your work and involvement in those  
 19 studies and that modeling, do you believe the  
 20 City's proposal to lower the minimum index level  
 21 could have the impact, based on your expert  
 22 opinion, of accelerating the movement of the  
 23 chloride plume?  
 24 **A. Yes.**  
 25 Q. And from that standpoint, if we look at public

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1 interest in the context of the -- the health,  
 2 overall quality and health of the aquifer in  
 3 that sense, is there a concern to the public  
 4 interest if we lower the minimum index level?  
 5 **A. Absolutely.**  
 6 Q. With respect to work where a water table has  
 7 dropped and how that's impacted minimum  
 8 desirable streamflow, what work have you done in  
 9 the past in your job in the District in that  
 10 regard?  
 11 **A. As far as impact of minimum desirable**  
 12 **streamflow?**  
 13 Q. If the water table drops?  
 14 **A. Well, certainly, you know, we're a groundwater**  
 15 **management district so we don't deal with**  
 16 **streamflow necessarily, although in relationship**  
 17 **to this project, minimum desirable streamflow is**  
 18 **important because the flow has to be higher for**  
 19 **the City to be able to operate their intakes on**  
 20 **the -- on the Little Arkansas.**  
 21 **Obviously, I look at minimum desirable**  
 22 **streamflow in the Little Ark because some of my**  
 23 **District members get impacted. Those that**  
 24 **withdraw from -- directly from the river get**  
 25 **impacted every year, almost every year, so I am**

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1 oftentimes looking at streamflow gages on the  
 2 Little Arkansas. And, in fact, I do every month  
 3 for my board of directors, I advise them what  
 4 the streamflow is on the Little Arkansas at  
 5 every board meeting, both at the Highway 50 gage  
 6 and at the Valley Center gage.  
 7 Q. Have you done any analysis in what the effects  
 8 of lowering a water table would be and its  
 9 impacts on minimum desirable streamflow during  
 10 your time at the District?  
 11 **A. Well, I've certainly looked at the streamflow**  
 12 **response to groundwater levels. We measure**  
 13 **ground -- groundwater levels in all of our**  
 14 **monitoring wells quarterly, we have some**  
 15 **automated groundwater-level recording devices.**  
 16 **It's quite obvious when the water table drops**  
 17 **significantly, it impacts minimum desirable**  
 18 **streamflow in both the Big Arkansas and the**  
 19 **Little Arkansas River. We saw the Big Ark and**  
 20 **the Little Ark, at least, at locations go**  
 21 **completely dry during the 2011 and 2012 drought.**  
 22 **And, in fact, I have some pictures of them if we**  
 23 **want to look at them.**  
 24 Q. Well, and that's based on your own analysis that  
 25 MDS drops when the water table drops, that's

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1 based on your own analysis and data you have  
 2 collected; is that right?  
 3 **A. Certainly data that I've looked at, I mean,**  
 4 **that's pretty base hydrology, the Little**  
 5 **Arkansas and the Big Arkansas are hydraulically**  
 6 **connected to the aquifer, when the groundwater**  
 7 **levels drop, they reduce the flow in the river,**  
 8 **both rivers.**  
 9 Q. So based on that very basic hydrology and your  
 10 background, understanding that if the water  
 11 level drops, we're going to a new minimum index  
 12 level, does that have the potential to also  
 13 decrease minimum desirable streamflow in the  
 14 aquifer?  
 15 **A. During that time when the recharge credits are**  
 16 **being recovered and driving those water levels**  
 17 **even lower than 1993 levels, absolutely.**  
 18 Q. So in other words, lowering the minimum index  
 19 level as articulated by the City, just based on  
 20 your experience working for the District, you  
 21 believe that has the potential to also  
 22 negatively affect minimum desirable streamflow?  
 23 **A. Yes.**  
 24 Q. Just a moment ago, just, I guess, for what it's  
 25 worth, you referenced some pictures, you said

1 that previously back in 2011, I think you said,  
2 the stream dried up; is that right?  
3 **A. I believe the pictures are from 2012, I would**  
4 **need to look at them again. I think they're in**  
5 **one of --**  
6 Q. Well, let's turn to Exhibit 54 while we're at  
7 it. Tell me when you're there, Mr. Boese.  
8 **A. I'm there, Dave.**  
9 Q. Mr. Boese, I usually don't question your memory  
10 on these things, do these appear to be photos  
11 from August of 2012 regarding the river in the  
12 Little Arkansas River in -- and first of all,  
13 where were these taken?  
14 **A. The -- the first one is standing just off of**  
15 **the -- or just on the Bentley bridge near**  
16 **Bentley, Kansas. This is a picture of the Big**  
17 **Arkansas River in August of 2012. And of**  
18 **considerable note would be the -- would be the**  
19 **four-wheeler or motorcycle tracks that are in**  
20 **the -- in the river. We're kind of used to**  
21 **seeing that in western Kansas, we're not used to**  
22 **seeing that in this part of Kansas.**  
23 Q. And on the next page, there's another photo that  
24 you took as GMD staff showing the river having  
25 dried up on the Little Arkansas River in Harvey

1 County, where was that taken?  
2 **A. This was taken in northwest Harvey County of the**  
3 **Little Arkansas River. That's the bed of the**  
4 **river completely dry, with a slight, I guess,**  
5 **disgusting looking puddle in it.**  
6 Q. And would you agree that both of these photos  
7 represent a true and accurate depiction of what  
8 the river looked like in August of 2012 for both  
9 the Big Arkansas River in the case of the first  
10 photo and the Little Arkansas River in the case  
11 of the second photo?  
12 **A. At these specific locations, yes, the river was**  
13 **not flowing, there was no water other than this**  
14 **water that you can see ponded up in either --**  
15 **either river at that location. It doesn't mean**  
16 **the entire river stretch was -- was dry**  
17 **throughout the District, but certainly at these**  
18 **locations there was no water flowing. You would**  
19 **say minimum desirable streamflow, there was no**  
20 **streamflow at these locations.**  
21 **MR. STUCKY:** I move to admit the  
22 District's Exhibit 54.  
23 **PRESIDING OFFICER:** Any objections?  
24 **MR. MCLEOD:** Just to clarify and  
25 only because the boxes on them say photo by

1 GMD2 staff, was the witness the staffer  
2 that took these photos?  
3 **BY MR. STUCKY:**  
4 Q. Mr. Boese, you were, in fact, the staff member,  
5 to the best of your memory, that took these  
6 photos, correct?  
7 **A. I'm going to -- I'm going to pause and say I**  
8 **don't know. I believe I was standing with one**  
9 **of my staff members, and I'm not sure which one**  
10 **of us held the camera when we took the pictures.**  
11 **I was there when the picture was taken. Did I**  
12 **snap the picture? I -- I do not entirely**  
13 **recall.**  
14 **MR. MCLEOD:** No objection.  
15 **MR. OLEEN:** I'm going to object, I  
16 don't recall if the witness testified that  
17 these depict portions of the river subject  
18 to MDS.  
19 **A. I'm -- I'm sorry, I'm not understanding your**  
20 **question.**  
21 **MR. STUCKY:** I don't either, I don't  
22 understand the objection.  
23 **A. The Little Arkansas River has an MDS flow on it.**  
24 **MR. STUCKY:** He's just saying that's  
25 what the river looked like, that it -- they

1 dried up in August of 2012, both the Big  
2 Arkansas and the Little Arkansas, that's  
3 what he was saying.  
4 **MR. OLEEN:** And he's testifying  
5 that -- 'cause they say, like, near  
6 Bentley, I don't know exactly where. He's  
7 testifying that these depict portions of  
8 the river that are subject to MDS at the  
9 time he's claiming these photographs were  
10 taken?  
11 **BY MR. STUCKY:**  
12 Q. Mr. Boese, did you hear the question, he's  
13 asking if whether or not these rivers were  
14 subject to minimum desirable streamflows at the  
15 time these pictures were taken, I think is the  
16 question?  
17 **A. Well, there's minimum desirable streamflow**  
18 **established on the Little Arkansas, I guess I**  
19 **will -- I'll need to look at what it is on the**  
20 **Big Arkansas.**  
21 **MR. STUCKY:** And I'm just going to  
22 speed this up, for the purposes of the  
23 admission of these exhibits, I would ask  
24 that they be admitted. I don't think  
25 that's a relevant objection for the purpose



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1 of -- he's already testified that he was  
 2 present when the pictures were taken, what  
 3 they depict, I would ask that they be  
 4 admitted at this time.  
 5 **PRESIDING OFFICER:** Yeah, I -- I  
 6 don't think that they were being -- that he  
 7 represented that these were specific areas  
 8 subject to MDS, even though that was the  
 9 context of the conversation beforehand. So  
 10 I'm going to agree with Mr. Stucky and  
 11 admit these photos. GMD 4 -- or 54, sorry,  
 12 is admitted.  
 13 **BY MR. STUCKY:**  
 14 Q. So, Mr. Boese, as -- you're familiar with the,  
 15 at least in a general sense, with the expert  
 16 report of Dave Romero; is that right?  
 17 **A. Yes.**  
 18 Q. And Mr. Romero mentions in his expert report  
 19 that the concept of the river drying up and the  
 20 effects that that would have on the model,  
 21 that's -- that's something that he opines on; is  
 22 that right?  
 23 **A. Yes.**  
 24 Q. And without rendering any opinion on it, you  
 25 would at least stipulate that in 2012, which are

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1 some of the years that were looked at for the  
 2 City's modeling, both the Big Arkansas and the  
 3 Little Arkansas did, in fact -- did, in fact,  
 4 dry up in at least one or more places; is that  
 5 true?  
 6 **A. Yes.**  
 7 Q. I know -- I think you answered this question,  
 8 but a rash of objections, using Mr. McLeod's  
 9 terminology, were made, do you believe that  
 10 dropping the minimum index level to a new  
 11 minimum index level could have the effect of  
 12 adversely impacting minimum desirable streamflow  
 13 when those credits are withdrawn?  
 14 **A. Yes.**  
 15 Q. Yesterday and the previous times when we were  
 16 here there was a series of questions asked to  
 17 Mr. Letourneau with regard to well drilling logs  
 18 and also the corresponding hydrographs. Do you  
 19 recall all those discussions?  
 20 **A. Yes.**  
 21 Q. And, in fact, we've had a series of well logs  
 22 that have already been admitted, is that right,  
 23 into evidence?  
 24 **A. Yes.**  
 25 Q. As far as all the well logs that have been

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1 admitted, are those all ones that you would have  
 2 looked at?  
 3 **A. Yes.**  
 4 Q. Do you agree for the most part with  
 5 Mr. Letourneau's opinion with regard to the  
 6 variance between the practical saturated  
 7 thickness and the reported saturated thickness,  
 8 both with respect to dropping the minimum index  
 9 level and with respect to the modeled drought  
 10 scenarios?  
 11 **A. I agree with Mr. Letourneau, I was -- I had**  
 12 **slightly different numbers on some of them. I**  
 13 **think particularly IW1, when I -- when I did**  
 14 **the math, I actually had a less saturated**  
 15 **thickness --**  
 16 **MR. MCLEOD:** I'm going to object to  
 17 the line of questioning because practical  
 18 saturated thickness was not covered at all  
 19 in Mr. Boese's expert report, nor do I  
 20 recall any material on the topic of  
 21 practical saturated thickness being shared  
 22 with the City in discovery.  
 23 **PRESIDING OFFICER:** It wasn't in  
 24 Mr. Letourneau's report either.  
 25 **MR. MCLEOD:** Yes, and

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1 Mr. Letourneau, however, was asked about it  
 2 on cross, by a hostile party, not by the  
 3 party that was sponsoring him as an expert.  
 4 **PRESIDING OFFICER:** Mr. Stucky.  
 5 **MR. STUCKY:** Well, I think that  
 6 there is -- his report does talk about the  
 7 impacts to the aquifer if we're to drop the  
 8 minimum index level, he talks about how  
 9 there's -- there's a fear that it could  
 10 adversely impact the aquifer, that it could  
 11 adversely impact minimum desirable  
 12 streamflow, and I think there's also  
 13 discussion in his report about how the  
 14 City's proposal -- in fact, I'm looking at  
 15 talks about water levels dropping based on  
 16 the City's proposal, he does talk about  
 17 water levels dropping. I would acknowledge  
 18 that the term practical saturated  
 19 thickness, end quote, is not actually  
 20 utilized in his report, but I think that  
 21 that discussion, and based on his role in  
 22 the District, properly stems from some of  
 23 the opinions he's already rendered in his  
 24 expert report. And also based on the  
 25 liberal nature of this hearing so ...

1 **PRESIDING OFFICER:** Mr. Oleen has  
2 stood up.  
3 **MR. OLEEN:** Just to say I join in  
4 the objection. DWR's witness was only  
5 asked about that concept on cross, and it's  
6 not something that appears -- the concept  
7 of saturated thickness isn't in Mr. Boese's  
8 report, and I think we're starting to  
9 stretch the bounds of what his report  
10 included, to include a lot more things that  
11 it doesn't include that GMD would like to  
12 talk about today, but I don't think it's  
13 appropriate to talk about it either.  
14 **MR. MCLEOD:** And just by way of  
15 brief rejoinder, it's a very critical  
16 distinction that it was on cross. I mean,  
17 it -- it obviously was an argument that the  
18 District had developed in detail and  
19 withheld all of it in discovery and Counsel  
20 managed to spring it as an ambush tactic,  
21 surprise tactic in Mr. Letourneau's exam on  
22 cross, and I think Counsel gets by with  
23 that, and that was very skillful. But it  
24 is then completely different to move the  
25 whole topic area over to the witness

1 they're sponsoring who said nothing about  
2 it in his expert report and then have him  
3 take up that whole ambushed topic area and  
4 carry the ball forward on it.  
5 **MR. STUCKY:** He talks about, and I'm  
6 quoting the bottom of page 5 of his report,  
7 he says, indeed, adversely affecting MDS  
8 would be considered an unreasonable  
9 lowering of the static water level, and  
10 he's talking about in the context of  
11 minimum index levels. I think he does talk  
12 about the concept of -- of lowering the  
13 static water level, and I think it does  
14 reasonably relate to his report for that  
15 reason.  
16 **PRESIDING OFFICER:** But I think what  
17 they're objecting to is the saturated  
18 thickness aspect of what you're asking  
19 about, not the MDS.  
20 **MR. STUCKY:** Well, but I think that  
21 saturated thickness goes hand in hand  
22 with -- with water levels, and he talked  
23 about how the City's proposal would --  
24 would have the effect of dropping the  
25 static water level, and I think saturated

1 thickness goes hand in hand with water  
2 levels. I mean, you're talking about the  
3 distance between bedrock and the static  
4 water level, and he says that static water  
5 level will drop, and so I think there is a  
6 correlation between the two.  
7 **PRESIDING OFFICER:** And remind me,  
8 when you were first qualifying Mr. Boese  
9 and questioning him, you did discuss the  
10 use of well logs?  
11 **MR. STUCKY:** That's right.  
12 **PRESIDING OFFICER:** And the review  
13 of well logs and the analysis of the  
14 contents of well logs?  
15 **MR. STUCKY:** Right, he's done that  
16 throughout his career in his 28 years with  
17 the District. He's looked at a lot of well  
18 logs.  
19 **MR. OLEEN:** If I may, Madam Hearing  
20 Officer, it's not only, perhaps, to  
21 Mr. Boese's qualifications. If he's looked  
22 at a lot of well logs, perhaps he's  
23 qualified to talk about the concept of  
24 practical saturated thickness. The point  
25 is that it wasn't in this expert report,

1 and I think, I have to disagree with  
2 Mr. Stucky, I think talking about static  
3 water levels is not the same as talking  
4 about the practical saturated thickness  
5 analysis, which Mr. Boese may be qualified  
6 to do, but it's more of a disclosure  
7 concern and preparing for this hearing than  
8 it is necessarily about Mr. Boese's  
9 knowledge that he has.  
10 And I would -- I'm sorry, I would also  
11 add that the well logs were not produced as  
12 part of the original exchange of the  
13 exhibits, if memory serves me correctly.  
14 That was something that was added on later  
15 in these proceedings.  
16 **A. Could I -- could I add something at this point  
17 in time? I just wanted to state that the well  
18 logs are wells for the IW wells that the City  
19 hired and had a consultant, so they -- they've  
20 had these well logs since 2001 when they were  
21 installed. Just wanted to point out that these  
22 are not -- these are the City's monitoring wells  
23 that they paid for to have those index wells.  
24 It was their consultant, their driller put those  
25 in. Just wanted to state that for the record.**

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1 **MR. STUCKY:** It's not data we've  
 2 hidden from any party in this case.  
 3 **MR. OLEEN:** But the fact that  
 4 Mr. Boese is planning to testify about it  
 5 today at this hearing is something that I  
 6 think has been hidden.  
 7 **MR. MCLEOD:** And I join in that last  
 8 comment. If I -- if I willfully and  
 9 completely withhold an entire developed  
 10 argument in the course of responding to  
 11 discovery, it is not curative that the  
 12 underlying information is somewhere out  
 13 there where the other party could have got  
 14 it, albeit I've never told them that I'm  
 15 going to use that information for the  
 16 purpose that I've concealed in my responses  
 17 to discovery. To the extent that the  
 18 District made, in my opinion, early,  
 19 numerous, poorly founded complaints about  
 20 surprise, this is -- this is shameless  
 21 conduct by the District.  
 22 **PRESIDING OFFICER:** I am mindful of  
 23 the great deal of discretion I have  
 24 regarding admissibility, I am also mindful  
 25 of trying to uphold standards of fairness.

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1 I am not going to impart any bad faith  
 2 behavior on any of the parties in this  
 3 particular case or in any other case.  
 4 Although I believe it is potentially  
 5 helpful to me to hear from Mr. Boese, in  
 6 this particular instance, because it's a  
 7 new argument, not in the expert reports,  
 8 I'm afraid I'm going to have to ask you,  
 9 Mr. Stucky, to move on.  
 10 I believe we need -- well, I'm going to  
 11 withdraw that. Everyone, I'm sure and I'm  
 12 confident, is doing their very best and  
 13 professional job they can. Let's keep it  
 14 courteous, let's be efficient, and I will  
 15 sustain the objection for the reasons  
 16 argued in terms of not clearly in the  
 17 expert report, matter of surprise. But,  
 18 again, I don't believe -- I'm not willing  
 19 to buy off on any particular ill will or  
 20 unprofessional conduct in that regard.  
 21 So, Mr. Stucky, if you'll proceed with  
 22 your next topic.  
 23 **MR. STUCKY:** I will do so.  
 24 **BY MR. STUCKY:**  
 25 Q. Mr. Boese, previously we talked about ASR Phase

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1 I order and ASR Phase II order as it relates to  
 2 passive recharge credits. And, in fact, you  
 3 indicated that there was some conditions that  
 4 were made with regard to passive recharge  
 5 credits; is that true?  
 6 **A. Yes.**  
 7 Q. And, indeed, you gave us a definition of passive  
 8 recharge credits, what -- what was that  
 9 definition?  
 10 **A. The chief engineer when he wrote the ASR Phase I**  
 11 **order gave us a definition in that order, and I**  
 12 **don't know if I'll get it word for word, water**  
 13 **which the City could have pumped but did not.**  
 14 Q. Now I'd ask that you turn to page 1-2 of the  
 15 City's proposal document, which is identified in  
 16 Exhibit 1.  
 17 **PRESIDING OFFICER:** I'm sorry, where  
 18 are we in the proposal?  
 19 **MR. STUCKY:** Page 1-2 --  
 20 **PRESIDING OFFICER:** 1-2, thank you.  
 21 **MR. STUCKY:** -- in the proposal.  
 22 **BY MR. STUCKY:**  
 23 Q. The -- at the bottom of that page, I think it's  
 24 the last full sentence, can you read the  
 25 beginning of that sentence in their proposal?

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1 Aloud for the record, Mr. Boese.  
 2 **A. Is it the second from the last that starts with**  
 3 **the water?**  
 4 Q. Yeah, second from the last, sorry.  
 5 **A. Okay. That's okay. The water left in storage**  
 6 **as a result of utilizing Little Arkansas River**  
 7 **flows rather than groundwater from the EBWF**  
 8 **would be considered as an ASR aquifer**  
 9 **maintenance credit, parentheses, AMC, with**  
 10 **similar characteristics to the current ASR**  
 11 **recharge credits.**  
 12 Q. So it talks about the water left in storage and  
 13 how that would get consideration as an aquifer  
 14 maintenance credit. Is that what it's saying?  
 15 **A. Yes.**  
 16 Q. Isn't that the same thing as what was prohibited  
 17 in ASR Phase I and Phase II orders and  
 18 memorandums of understanding?  
 19 **A. In the memorandum of understanding?**  
 20 Q. Well, I'm sorry, in the Phase I and Phase II  
 21 orders prohibiting passive recharge credits,  
 22 isn't that the same thing?  
 23 **A. Yes.**  
 24 Q. So in other words, is it your view that the  
 25 City's proposal as it relates to aquifer

1 maintenance credits is nothing more than a  
2 passive recharge credit?

3 **A. I believe that's exactly what it is.**

4 Q. And are you basing that on the fact that the  
5 definition that was identified in ASR Phase I is  
6 almost identical to the language used in the  
7 City's proposal?

8 **A. Yes.**

9 Q. Can the City re-appropriate water that is not  
10 pumped from existing water rights?

11 **A. No.**

12 Q. And why is that? Would it violate a safe yield  
13 principle?

14 **A. Yes. And the Wichita well field is extremely  
15 over-appropriated, and I'm sure we'll get to  
16 that, the foundation on that very shortly.  
17 Water that's not pumped does not go back into  
18 the -- into the pot, so to speak, that can be  
19 re-appropriated.**

20 Q. Let's turn to Exhibit 43 in your notebooks.  
21 What is Exhibit 43, Mr. Boese?

22 **A. I'm going to give the hearing officer a second  
23 to --**

24 **PRESIDING OFFICER:** Oh, I'm good.

25 Thank you.

1 **table on average per year in acre-feet. The**  
2 **blue, which is the middle number of those series**  
3 **of three numbers, is the average water use. And**  
4 **I should state I believe most of these are from**  
5 **the 2005 to 2014 reported water use to the**  
6 **Division of Water Resources, that's the average**  
7 **water use. And then the red, which is the**  
8 **bottom number in each township, is the**  
9 **authorized annual quantity.**

10 **So as -- as you look through these numbers,**  
11 **essentially every township, not near the**  
12 **authorized quantity is being pumped. If you**  
13 **compare the red, which is the authorized**  
14 **quantity, to the blue, which is the average**  
15 **water use, you can see that most are**  
16 **significantly lower as far as what is actually**  
17 **pumped compared to what is actually authorized.**

18 Q. So merely as a matter of house clean -- or  
19 housekeeping and cleanup, the City testified  
20 that to the extent water levels were restored in  
21 the aquifer, that would have been based in large  
22 part on the fact that the City reduced its  
23 pumping in the aquifer and had been a better  
24 steward of its management of the aquifer. Do  
25 you recall that testimony?

1 **A. That's a Kansas Geological Survey Equus Beds**  
2 **Groundwater Management District No. 2**  
3 **sustainability assessment.**

4 **BY MR. STUCKY:**

5 Q. There's been some discussion with respect to the  
6 fact that in the past the City has been a good  
7 steward of the aquifer. Do you recall some of  
8 that testimony from the City?

9 **A. Yes.**

10 Q. Could you turn to page 61 of this report? It's  
11 numbered at the bottom of the page.

12 **A. Okay.**

13 Q. What does page 61 tell us about whether or not  
14 other water users in the aquifer have been good  
15 stewards of their management of the water  
16 resource?

17 **A. I feel like I should give a little -- a little**  
18 **background. This is figures that were generated**  
19 **by Kansas Geological Survey; of course, the**  
20 **District staff was very involved in this**  
21 **process. There are three numbers in each**  
22 **township. The -- the top number is the average**  
23 **sustainable water use; in other words, how much**  
24 **water can be withdrawn from that township that**  
25 **would be sustainable without a declining water**

1 **A. Yes.**  
2 Q. Is it your belief that the aquifer also  
3 recovered because -- because others in the  
4 aquifer were not also fully pumping their water  
5 rights?

6 **A. That would be a component of that, absolutely.**

7 Q. And so, in fact, it was constituents throughout  
8 the Equus Beds Aquifer have, what this shows,  
9 have been a good steward of the management of  
10 the aquifer in the past, is that what this is  
11 showing us?

12 **A. Yes, on average, the -- the authorized quantity**  
13 **is not nearly being pumped every year.**

14 Q. Mr. Boese, I asked some prior questions about  
15 the difference between taking water directly  
16 from the Little Arkansas River and sending it to  
17 the City for use and an aquifer maintenance  
18 credit being created, and I was told that under  
19 that scenario that's not a passive recharge  
20 credit; but on the other hand, if we were to  
21 take water from El Dorado Reservoir, treat it,  
22 use it in the City that there would not be --  
23 that it would be a passive recharge credit if  
24 the City sought a credit for not pumping down  
25 the aquifer. Similarly, if -- the City would

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1 not get a credit for pumping from Cheney  
 2 Reservoir. Do you recall all those discussions?  
 3 **A. Yes.**  
 4 Q. And I asked specifically if we were to take this  
 5 water from El Dorado Reservoir or from Cheney  
 6 Reservoir and first treat it in the Bentley  
 7 treatment facility, what's the distinction  
 8 between that and taking water from the Little  
 9 Arkansas River, do you recall me asking for that  
 10 distinction?  
 11 **A. Yes.**  
 12 Q. As you sat here and listened to all that  
 13 testimony, explain for me what that distinction  
 14 was that was made.  
 15 **A. I don't exactly recall. I believe that the**  
 16 **distinction was that the Little Arkansas River**  
 17 **is currently authorized for -- for recharge and**  
 18 **the El Dorado water is not authorized for**  
 19 **recharge, if I remember correctly.**  
 20 Q. Setting aside past distinctions that were made,  
 21 do you believe that those scenarios, taking  
 22 water from Cheney, treating it, and sending it  
 23 to the City, taking water from El Dorado  
 24 Reservoir, treating it, and sending it to the  
 25 City, taking water from the Big Arkansas River,

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1 treating it, and sending it to the City is  
 2 essentially the same as the concept of taking  
 3 overflow water from the Little Arkansas River,  
 4 treating it, and sending it to the City in the  
 5 sense that all of those would be examples of  
 6 passive recharge credits if the City is seeking  
 7 credit for not having pumped the aquifer?  
 8 **A. I see no difference between -- between any of**  
 9 **them; all of them are using surface water in**  
 10 **lieu of pumping groundwater, and you don't get**  
 11 **credit for that. It's a good thing, but you**  
 12 **don't get credit for it.**  
 13 Q. Mr. Boese, you testified previously and it's  
 14 also outlined in your expert report work that  
 15 you've done with respect to safe yield analysis;  
 16 is that right?  
 17 **A. Yes.**  
 18 Q. And I think you indicated that -- that in the  
 19 past you've done a safe yield analysis with  
 20 regard to the City's permits for ASR Phase II.  
 21 Is that a true statement?  
 22 **A. I have, yes, I did it for every one of their 30**  
 23 **existing ASR permits.**  
 24 Q. First of all, what regulation applies -- well,  
 25 let's turn to Exhibit 24, K.A.R. 5-22-7(b)(7),

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1 let's turn to that in Exhibit 24.  
 2 **A. Can you repeat which one you are wanting me to**  
 3 **look at, Dave?**  
 4 Q. K.A.R. 5-22-7 and subsection (b)(7).  
 5 **A. Okay.**  
 6 Q. Tell me what that regulation tells us about safe  
 7 yield and exempting an ASR well from safe yield.  
 8 **A. Says an application for an aquifer storage and**  
 9 **recovery well is exempt from safe yield.**  
 10 Q. Now, we'll talk about this in greater detail in  
 11 a moment, but is it your belief that an aquifer  
 12 maintenance credit is exempt from safe yield?  
 13 **A. No.**  
 14 Q. And why is that?  
 15 **A. An aquifer storage and recovery well is exempt**  
 16 **because it is adding an outside water source, in**  
 17 **this case the Little Arkansas River, to the**  
 18 **supply of the groundwater. We're in a heavily**  
 19 **over-appropriated aquifer, we're going to talk**  
 20 **about that in a little bit. To be able to be**  
 21 **exempt from safe yield, to gain approval for a**  
 22 **new appropriation right, you must add water to**  
 23 **the system. That is not water left in storage;**  
 24 **that is adding outside source water to the**  
 25 **system. An AMC does not do that.**

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1 Q. If we were to turn to Exhibit 22 just so we can  
 2 look at these regulations, which is K.A.R.  
 3 5-3-9(b), and just to speed up your time,  
 4 Mr. Boese, it's on page 36 on Exhibit 22, would  
 5 you agree with me that that regulation indicates  
 6 that the public interest is protected only when  
 7 safe yield can be appropriated, and that's a  
 8 statewide regulation?  
 9 **A. Which -- which one were you looking at again,**  
 10 **Dave?**  
 11 Q. K.A.R. 5-3-9.  
 12 **A. Yes, subsection (b) says, unless otherwise**  
 13 **provided by regulation, it shall be considered**  
 14 **to be in the public interest that only the safe**  
 15 **yield of any water -- any source of supply shall**  
 16 **be appropriated.**  
 17 Q. So whereas K.A.R. 5-3-9 is a statewide  
 18 regulation, the other regulation we talked about  
 19 is unique to the Groundwater Management  
 20 District; is that true?  
 21 **A. That is correct.**  
 22 Q. And K.A.R. 5-22-7, as you indicate in your  
 23 expert report, is designed -- dictates upon the  
 24 GMD to ensure that safe yield calculations are  
 25 performed; is that -- is that true?

1 **A. That spells out the way that we perform the safe**  
2 **yield calculation, that is correct.**

3 Q. You indicated earlier that you performed safe  
4 yield calculations -- well, you -- let me just  
5 back up. Why -- I want to make sure I caught  
6 this. Why would ASR Phase II credits be exempt  
7 from safe yield, explain that to me, why you  
8 think that exemption was created?

9 **A. The existing physical recharge credits?**

10 Q. That's right, ASR Phase II credits?

11 **A. Because physical recharge adds to the supply, to**  
12 **the groundwater supply. Again, we're in an**  
13 **over-appropriated aquifer, all the water is**  
14 **already dedicated to other users; to be able to**  
15 **gain an additional appropriation, additional**  
16 **water must be added to the system. You must**  
17 **en -- enhance the recharge, you must add more**  
18 **water to the system.**

19 Q. On the other hand, with an aquifer maintenance  
20 credit proposal, is water added to the Equus  
21 Beds Aquifer by the City?

22 **A. No.**

23 Q. So that's the reason why you believe that  
24 it's -- that the City's proposal changes are not  
25 exempt from safe yield?

1 something that you do almost daily throughout  
2 your job; is that true?

3 **A. I -- I do a bunch. I would guess well over a**  
4 **thousand safe yield calculations that I've done**  
5 **in my time at the District. We average a couple**  
6 **of hundred per year, so I'm sure it's -- I'm**  
7 **sure it's way over a thousand, it may be in the**  
8 **multiple thousands of safe yield calculations**  
9 **that I've done.**

10 Q. I'd ask that you turn in your exhibit notebook  
11 to Exhibit 59. What is Exhibit 59?

12 **A. Exhibit 59 is the 30 safe yield calculations**  
13 **that I did, which would be one for each one of**  
14 **the existing ASR Phase II permits.**

15 Q. Explain on the first page of Exhibit 59 how  
16 these safe yield calculations work and what your  
17 finding was.

18 **A. These are done pursuant to K.A.R. 7-20 --**  
19 **5-22-7, excuse me, which specifies how we do**  
20 **safe yield calculations. This is conducted with**  
21 **a computer software, we use ArcGIS software,**  
22 **with a program that was originally written by**  
23 **Kansas Geological Survey for us.**

24 **Probably be easier just for me to explain**  
25 **this. The red small dot that is in the middle**

1 **A. That is correct, that is -- that is why they**  
2 **would not be exempt.**

3 Q. You indicated earlier that you would have  
4 performed safe yield calculations as it related  
5 to the ASR Phase II permits. Is that what you  
6 said earlier?

7 **A. I did perform them for this purpose, I did**  
8 **not -- I don't believe I performed them when I**  
9 **reviewed the applications because there was no**  
10 **need to review those for safe yield because they**  
11 **were exempt.**

12 Q. Okay. So -- and whereas ASR Phase II was  
13 exempt, it's your opinion that ASR -- that the  
14 AMC proposal is not exempt; is that right?

15 **A. That -- that is correct, AMC --**

16 Q. And so because of that, you have found merit  
17 looking into the safe yield calculations be  
18 conducted with respect to aquifer maintenance  
19 credits; is that right?

20 **A. Yes, I went ahead and ran safe yield evaluations**  
21 **on all 30 existing permits that the City wants**  
22 **to now be able to claim aquifer maintenance**  
23 **credits.**

24 Q. And just to back up, aquifer -- just to back up,  
25 running safe yield calculations, I mean, that's

1 **of the evaluation is the well location for ASR**  
2 **Phase II water permit 46,714. The larger circle**  
3 **is a two-mile-radius circle that is drawn around**  
4 **that point of diversion, that well location.**  
5 **All the red triangles with the circle around**  
6 **them are existing points of diversion, whether**  
7 **they be irrigation wells, municipal wells, base**  
8 **flow nodes on the Little Arkansas in this case**  
9 **had some of those, or any non-domestic well, any**  
10 **permitted well.**

11 **The spreadsheet to the right is a list of**  
12 **all of those points of diversion that are**  
13 **located within that two-mile-radius circle,**  
14 **along with their water right number, their legal**  
15 **description, footage measurements to the well,**  
16 **their type of use, and their authorized**  
17 **quantity. There are 8,042 acres in a two-mile**  
18 **circle. In Harvey County, we use 6 inches of**  
19 **recharge, so it's very simple math, 8,042 acres**  
20 **times half a foot would allow 4,021 acre-feet of**  
21 **appropriation in that evaluation area of**  
22 **consideration.**

23 **The spreadsheet then indicates that our**  
24 **total existing appropriation, which you'll find**  
25 **down at the bottom right-hand corner at this**

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1 location, is a little bit over 11,000 acre-feet.  
 2 Of note is the next line, which is  
 3 nonconsumptive appropriations, those are the ASR  
 4 Phase II, three permits that are 500 acre-feet  
 5 each. You can see they are -- they are then  
 6 subtracted to come up with consumptive  
 7 appropriations of 9,572.35 acre-feet. This  
 8 location would then indicate that this area is  
 9 over-appropriated by over two times what it  
 10 should be.  
 11 Q. Okay. So -- and this would be for which permit  
 12 number?  
 13 A. This was ASR Phase II permit number 46,714.  
 14 Q. All right. Mr. Boese, without walking through  
 15 all those numbers in great detail, can you just  
 16 flip through and reference the permit number of  
 17 each of these and tell me if it's -- if it's  
 18 over-appropriated already and in a general sense  
 19 the extent to which it's over-appropriated. In  
 20 other words, if you can quickly say, we see that  
 21 it's over-appropriated by double or quadruple,  
 22 if you could just do some quick testimony to  
 23 walk through these and speed up the record.  
 24 A. Sure, and for -- just for expediency, every one  
 25 of these should be 4,028 -- 4,021 acre-feet that

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1 should be allowed because they're all two-mile  
 2 circles in Harvey County. And I'm going to give  
 3 you the consumptive appropriation 'cause, again,  
 4 we do not count the ASR existing permits because  
 5 they are exempt. So I'm going to flip through  
 6 these fairly fast. 46,715 is about three and a  
 7 half times over-appropriated. 46,716 is almost  
 8 four times over-appropriated.  
 9 MR. OLEEN: I object, are you  
 10 saying, Mr. Boese, that the water right is  
 11 over-appropriated or the radius?  
 12 A. The area of consideration with the well location  
 13 as the proposed point of diversion if we were  
 14 running a new application, so it's a two-mile  
 15 circle drawn around the existing ASR Phase II  
 16 application or permit.  
 17 MR. OLEEN: So the radius is  
 18 over-appropriated. Okay, thank you for the  
 19 clarification.  
 20 A. Well, it's site specific. If I move -- if I  
 21 move the well location, the circle moves, so I  
 22 prefer to use the term at that location of where  
 23 the well is located, where the ASR well is  
 24 located, that area is -- it's specific to that  
 25 dot. If I move that dot a foot, the circle

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1 moves a foot, if that makes sense. So it is  
 2 site specific to that well. It doesn't mean  
 3 that if I move somewhere else in that circle  
 4 that that number is the same.  
 5 BY MR. STUCKY:  
 6 Q. All right. Mr. Boese, proceed with your quick  
 7 summary.  
 8 A. Okay. I think I left on 46,716, which is about  
 9 four times over-appropriated. 46,717, which,  
 10 again, is close to four times over-appropriated.  
 11 46,718 is, again, about -- not quite four times  
 12 appropriated. And I do want to keep noting that  
 13 I'm subtracting the -- the ASR Phase II. In the  
 14 one I just talked about, 46,718 had  
 15 7500 acre-feet of ASR Phase II recharge credit  
 16 appropriation. So if those were added in, if  
 17 they were not exempt, it would actually be five  
 18 and a half times over-appropriated.  
 19 46,719 is, again, close to four times  
 20 over-appropriated. 46,720 is roughly three and  
 21 a half times over-appropriated. 46,721 is  
 22 roughly three times over-appropriated. 46,722  
 23 is about three and a half times  
 24 over-appropriated. 46,723 is about three and a  
 25 half times over-appropriated. 46,724 is almost

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1 four times over-appropriated. 46,725 is a  
 2 little over double appropriated.  
 3 46,726 is a little over double  
 4 appropriated. 46,727 is about two and a half  
 5 times over-appropriated. 46,728 is about two  
 6 and a half times over-appropriated. 46,729 is  
 7 about one and a half times over-appropriated.  
 8 46,730 is about one and a half times  
 9 over-appropriated. 46,731 is about three and a  
 10 half times over-appropriated. And 46,732 is  
 11 about two and a half to three times  
 12 over-appropriated. And 46,733 is about two and  
 13 a half times over-appropriated.  
 14 And I probably should pause and say most or  
 15 all of these water permits were put in prior to  
 16 our safe yield regulation. Most of these were  
 17 approved, most of these permits were approved  
 18 prior to our safe yield regulation being in  
 19 effect. There hasn't been any new permits  
 20 allowed in the City of Wichita well field area  
 21 for a long time other than ASR permits or maybe  
 22 some small use type permits. And our safe yield  
 23 regulation went into effect in 1980, I believe,  
 24 so it's been closed for a long time.  
 25 PRESIDING OFFICER: Let's take a

1 quick break, maybe five, ten minutes.  
2 (Thereupon, a recess was taken;  
3 whereupon, the following was had.)  
4 **PRESIDING OFFICER:** Okay. We're  
5 back on the record. It's about a quarter  
6 till 4:00. Mr. Stucky.  
7 **BY MR. STUCKY:**  
8 Q. Mr. Boese, could you -- I think you were ready  
9 for safe yield evaluation for permit  
10 number 47,178, is that where we left off?  
11 **A. I'm sorry, Dave. Let me get to where I'm going**  
12 **here. Yes, sorry.**  
13 Q. Could you quickly wrap up your analysis of these  
14 safe yield calculations for the City's permits?  
15 **A. Sure. 47,178 is about two and a half times**  
16 **over-appropriated. 47,179 is almost four times**  
17 **over. 47,180 is over four times**  
18 **over-appropriated. 47,178 is about three times**  
19 **over-appropriated. 47,448 is about two and a**  
20 **half to three times over-appropriated. 47,449**  
21 **is about two and -- I'm sorry, three and a half**  
22 **times over-appropriated.**  
23 **47,450 is almost four times**  
24 **over-appropriated. 47,451 is almost four times**  
25 **over-approp -- I'm sorry, about three times**

1 **grossly over-appropriated.**  
2 Q. Okay.  
3 **A. And, in fact, I might just go ahead and add that**  
4 **some of these are very, very over-appropriated,**  
5 **and if you examine the spreadsheet on these,**  
6 **you'll see that in many of these the City of**  
7 **Wichita's native water rights over-appropriate**  
8 **the aquifer. Some of them where there's 14,000**  
9 **acre-feet, half of that or more may be the**  
10 **City's existing native water rights. So it's**  
11 **over-appropriated in a lot of places just by the**  
12 **City itself and then you add in the irrigation**  
13 **wells and other wells even further**  
14 **over-appropriates the area.**  
15 **MR. STUCKY:** I move to admit the  
16 District's Exhibit 59 into evidence.  
17 **PRESIDING OFFICER:** Any objection?  
18 District's 59 will be admitted.  
19 **BY MR. STUCKY:**  
20 Q. So summing up in, very quickly, Exhibit 59, if  
21 the City were to apply for new permits with  
22 respect to their AMC proposal, based on safe  
23 yield alone, would those permits be approved by  
24 the District?  
25 **A. For these 30 locations that I ran, I would not**

1 **over-appropriated. 47,452 is about three times**  
2 **over-appropriated. And 47,453 is about three**  
3 **times over-appropriated.**  
4 **And I -- I do feel like I need to clarify.**  
5 **I think I stated these are in Harvey County,**  
6 **we're using 6 inches, which is true. One or two**  
7 **of these, I believe, spill over into Sedgwick**  
8 **County, which we're also using 6 inches of**  
9 **recharge, so there was no difference in the**  
10 **maximum that would be allowed.**  
11 Q. You already testified that it's your view that  
12 the City's AMC proposal should be subject to new  
13 applications. Is that what you said before?  
14 **A. Yes.**  
15 Q. And so if it was subject to new applications, is  
16 it to follow that safe yield calculations would  
17 need to be made in your opinion?  
18 **A. Yes, AMC would not be exempt as an ASR well.**  
19 Q. And if you were to conduct those safe yield  
20 calculations, does what's shown in Exhibit 59  
21 substantially represent those safe yield  
22 calculations that you would -- you would make?  
23 **A. Yes. The difference being that I would not**  
24 **remove the -- the ASR quantity from the**  
25 **calculation, which means it would be even more**

1 **recommend them for approval. And I would go**  
2 **ahead and then also say anywhere in that Wichita**  
3 **well field area, I have evaluated enough and I**  
4 **have run some other calculations, I've looked at**  
5 **enough, there is no water available in the City**  
6 **of Wichita's existing well field for new**  
7 **appropriations, other than ASR wells or in some**  
8 **cases some small use type quantities.**  
9 Q. Mr. Boese, let's turn to Exhibit 41. Mr. Boese,  
10 what is Exhibit 41?  
11 **A. Exhibit 41 was a information and fact sheet that**  
12 **was prepared - the author indicated there was my**  
13 **former hydrologist, Steve Flaherty - on**  
14 **August 23rd, 2018. I can say that I also**  
15 **reviewed this document and assisted in its**  
16 **preparation. This was made for a Board of**  
17 **Directors meeting for the City's pending**  
18 **applications at the time, 48,704 through 48,733,**  
19 **these were the 30 new applications that the City**  
20 **then eventually withdrew and they were**  
21 **dismissed.**  
22 Q. So it's already been testified to, there's no  
23 new permits that are -- that are pending before  
24 us today because all of these were dismissed or  
25 withdrawn; is that right?



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1 **A. That's correct.**  
 2 Q. But at the time when the City applied for 30 new  
 3 permits, you along with Mr. Flaherty did some  
 4 safe yield calculations on those permits; is  
 5 that right?  
 6 **A. Yes, I believe Mr. Flaherty did all the safe**  
 7 **yields and I reviewed them.**  
 8 Q. And so do these safe yields represent the  
 9 outcome of your analysis as it related to those  
 10 permits and what you were going to present or  
 11 did present to the Board in that regard?  
 12 **A. Yes. Yeah, we went ahead and -- although safe**  
 13 **yield would be exempt if it was a physical**  
 14 **recharge credit, we went ahead and did safe**  
 15 **yield evaluations at each one of these**  
 16 **locations.**  
 17 Q. Just to illustrate the nature of how  
 18 over-appropriated the aquifer is, did any of the  
 19 City's new permits meet safe yield cal --  
 20 **MR. OLEEN:** I -- sorry, you can  
 21 finish your question and then I'll object.  
 22 **BY MR. STUCKY:**  
 23 Q. Did any of -- did any of the City's new permits  
 24 that were applied for meet these safe yield  
 25 calculations?

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1 **MR. OLEEN:** And I respectfully  
 2 object on relevance grounds. I know Madam  
 3 Hearing Officer doesn't need to be -- she  
 4 can determine what's relevant and what's  
 5 not, but we're not here to talk about any  
 6 pending applications, the record is already  
 7 voluminous enough, and so if there's not  
 8 really a reason to add another ream of  
 9 papers to it, I don't think we should be  
 10 doing that, so I object on that basis.  
 11 **PRESIDING OFFICER:** Can you explain  
 12 the relevance beyond the exhibit we just  
 13 did with all the safe yield calculations?  
 14 **MR. STUCKY:** Sure I could. The City  
 15 applied for permits related to this aquifer  
 16 maintenance credit proposal and, indeed, it  
 17 suggests that the City has the power to  
 18 seek future permits, and we've been talking  
 19 about what the City may or may not do in  
 20 the future. We know they attempted to  
 21 apply for these 30 permits in the past. It  
 22 stands to reason that if you as the hearing  
 23 officer approve their proposal, they'll  
 24 likely reapply for those 30 permits and  
 25 there'll -- there'll need to be a

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1 determination of whether or not safe yield  
 2 is met. And so we think that it's highly  
 3 relevant for that reason as we're trying to  
 4 predict what's going to happen in the  
 5 future.  
 6 And second of all, we think it's highly  
 7 relevant to show just for the simple  
 8 purpose that the aquifer is -- is  
 9 over-appropriated and new applications  
 10 wouldn't be accepted in any of these  
 11 locations where the City sought to seek  
 12 additional permits.  
 13 **MR. MCLEOD:** And if I just -- if I  
 14 just followed that, Madam Hearing Officer,  
 15 I think where Counsel is mistaken, I think  
 16 that those permit apps presumed AMC  
 17 recovery. And if your decision approves  
 18 AMCs, it will be because you have found  
 19 that the AMCs are recharge credits. And if  
 20 you have found that the AMCs are recharge  
 21 credits, they're not subject to safe yield.  
 22 On the other hand, as Mr. Letourneau, I  
 23 think, said in his testimony, if you find  
 24 that they are not recharge credits, they  
 25 don't exist, and the question of safe yield

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1 then is irrelevant for that reason. So  
 2 we're spending a lot of time on this  
 3 razzle-dazzle, and it is completely  
 4 irrelevant.  
 5 **MR. OLEEN:** I would just add that I  
 6 kind of think what Mr. Stucky mentioned,  
 7 his phraseology was maybe we seek to  
 8 predict the future or anticipate the  
 9 future, he said something like that, and  
 10 there's been a lot of hypotheticals about  
 11 future projects, future applications,  
 12 taking water from future reservoirs. We're  
 13 here today to talk about this proposal;  
 14 these applications are not part of this  
 15 proposal. We've just gone through 30 some  
 16 safe yield calculations from Mr. Boese, so  
 17 I think the evidence has -- there's enough  
 18 evidence in the record to the extent you --  
 19 well, as Mr. McLeod said, if AMCs aren't  
 20 recharge credits, then they don't exist.  
 21 But I'm personally done with hypotheticals,  
 22 I don't think it's necessary.  
 23 **PRESIDING OFFICER:** This sounds  
 24 like, if I understand what you're saying,  
 25 the purpose of this is to suggest possible

1 other courses of action the City might take  
2 if their proposal is not allowed to go  
3 forward as -- as proposed. Is that -- am I  
4 understanding that?  
5 **MR. STUCKY:** Right, it illustrates  
6 the fact that safe yield calculations would  
7 need to be calculated and safe yield would  
8 not be met if these new permits were  
9 reapplied for again. That's what it  
10 demonstrates.  
11 **PRESIDING OFFICER:** Okay. My --  
12 what -- that was a takeaway point basically  
13 that I got from the discussion we just had  
14 with Mr. Boese, and since these  
15 applications have been withdrawn and  
16 there's no telling if the proposal was  
17 denied if the City would indeed file these,  
18 so I think this probably does get a little  
19 too speculative. I think the idea that the  
20 area is well over-appropriated and if safe  
21 yield applies, then that would -- that  
22 would lead to some decisions.  
23 So I think I'm going to say that we  
24 don't need to go down this road, I think  
25 this is really -- I think looking at

1 testify as to these issues, and that motion in  
2 limine was overruled for that reason alone; is  
3 that -- for that reason, among other reasons.  
4 So, Mr. Boese, let's talk about your  
5 interpretation of these regulations. First of  
6 all, there's the aquifer storage and recovery  
7 permitting regulation found in K.A.R. 5-12-1(a).  
8 When you look at regulations, do you sometimes  
9 look at the title of the regulation to give you  
10 some guidance as far as what that regulation  
11 means?  
12 **A. Yes.**  
13 **Q.** What does the title of this regulation tell you  
14 and tell me the significance of any aspects of  
15 the title here?  
16 **A. This would --**  
17 **MR. OLEEN:** I object and I think I  
18 did similar objection during  
19 Mr. Letourneau's cross on the grounds that  
20 titles of laws and statutes don't have  
21 significance.  
22 **MR. STUCKY:** And I disagree, my --  
23 my understanding, and I guess we can brief  
24 this issue - if you would like me to brief  
25 it overnight, Madam Hearing Officer, I

1 possible implications and ramifications is  
2 important, but I think this gets into if  
3 the City were to refile these applications,  
4 and I think that's a little far into  
5 speculation. So let's skip over that part.  
6 **MR. STUCKY:** Will do.  
7 **BY MR. STUCKY:**  
8 **Q.** In your expert report, in page 6 and 7 of your  
9 expert report, which is found as Exhibit 39, are  
10 you on that?  
11 **A. I'm sorry, yes.**  
12 **Q.** Okay. On pages 6 and 7 of your expert report,  
13 you talk about some of the definitions that have  
14 to do with whether or not an aquifer maintenance  
15 credit is an artificial recharge, do you not?  
16 **A. Yes.**  
17 **Q.** Let's walk through -- and, again, just to clear  
18 the record here, these are all regulations or  
19 statutes that you would be quite familiar with,  
20 Mr. Boese, and that you would apply in your  
21 everyday job; is that right?  
22 **A. As it related to the ASR project and**  
23 **applications, yes.**  
24 **Q.** And, in fact, there was a motion in limine filed  
25 by the City where they targeted your ability to

1 can - but titles of statutes and  
2 regulations can be used in statutory  
3 construction to help draw implications as  
4 far as what the statute or regulation is  
5 about and how to properly construct it. I  
6 suppose -- that's my recollection. I  
7 suppose we can brief it tonight if we need  
8 to, but I -- I'm asking just a simple  
9 question in that regard, I don't -- I'm not  
10 sure that this objection is necessary.  
11 **MR. OLEEN:** If Mr. Stucky is going  
12 to go through a bunch of regulations, like  
13 I suspect he will, then I don't see the  
14 need to dwell on the title of them because  
15 we're about to get actually into the legal  
16 language.  
17 **PRESIDING OFFICER:** I believe that I  
18 ruled that it was okay and acceptable,  
19 permissible for Mr. Boese to testify  
20 regarding his interpretation through his  
21 job duties, his responsibilities, that he  
22 can testify about how he applies and reads  
23 the regulations. So it may not be -- it  
24 may or may not be true that an actual  
25 statutory construction of title has

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1 significance, perhaps it does to Mr. Boese,  
 2 and I said he can testify about that. So  
 3 please go ahead.  
 4 **MR. STUCKY:** Thank you.  
 5 **BY MR. STUCKY:**  
 6 Q. Mr. Boese, what does the title Aquifer Storage  
 7 and Recovery tell you about this regulation --  
 8 I'm sorry, Aquifer Storage and Recovery  
 9 Permitting, what does that tell you based on the  
 10 title?  
 11 **A. That tells me that the regulation deals with**  
 12 **what has to be -- what has to be done for a**  
 13 **permit, for an aquifer storage and recovery**  
 14 **permit -- or project.**  
 15 Q. So in other words, do you believe there's both  
 16 an act of storage and an act of recovery  
 17 pursuant to this regulation?  
 18 **A. Yes.**  
 19 Q. Tell me what is meant in your view in this  
 20 regulation by storing water in an aquifer  
 21 storage and recovery system.  
 22 **A. That would be the physical injection, artificial**  
 23 **recharge of a source water.**  
 24 Q. And then that's done pursuant to a permit, is  
 25 that right, for artificial recharge?

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1 **A. That's correct.**  
 2 Q. But there's a condition under which that permit  
 3 to appropriate water for artificial recharge,  
 4 there's a condition to that, it says, if the  
 5 water appropriated is source water, is that what  
 6 it says?  
 7 **A. Yes, it does.**  
 8 Q. And, in fact, there's a definition of source  
 9 water; is that right?  
 10 **A. That's correct.**  
 11 Q. Let's turn to the definition of source water. I  
 12 asked Mr. Letourneau a series of questions about  
 13 these four different requirements that help to  
 14 define source water, and without having to  
 15 rephrase those questions, tell me what you  
 16 believe this definition tells us about -- about  
 17 the nature of source water.  
 18 **A. That the source water would have to meet these**  
 19 **four conditions, it would have to be available;**  
 20 **it would obviously have to be out of above base**  
 21 **flow in a stream because that's number two; it**  
 22 **is not needed to satisfy minimum desirable**  
 23 **streamflow so it's not needed to maintain that**  
 24 **streamflow; and then would not degrade the**  
 25 **ambient quality in the basin storage area, so it**

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1 **would have to be treated properly. So the**  
 2 **source water would have to be surface water,**  
 3 **above base flow, and available and not -- not**  
 4 **needed for streamflow.**  
 5 Q. In your view, what does number 4 suggest as you  
 6 would interpret the definition of source water?  
 7 **A. That source water would have to be of acceptable**  
 8 **quality to be injected into the aquifer so that**  
 9 **it did not degrade the ambient water quality.**  
 10 Q. Now, jumping back to the definition, then, of  
 11 aquifer storage and recovery permitting, it  
 12 says -- so what we're talking about here, it  
 13 says, for artificial recharge if the water  
 14 appropriated is source water, and, again, so  
 15 what you're saying this regulation means is  
 16 source water or overflow water needs to be  
 17 treated, and then it implies it would have to be  
 18 injected into the aquifer. Was that your  
 19 testimony?  
 20 **A. Have to be treated as necessary. The bank**  
 21 **storage wells in the ASR Phase I does not**  
 22 **require any treatment because the quality is --**  
 23 **is good enough, but it would have to be treated**  
 24 **as needed.**  
 25 Q. So let's talk about the concept of an aquifer

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1 storage and recovery system that's in that next  
 2 regulation in your expert report. It says, it  
 3 means a physical infrastructure that meets the  
 4 following conditions, and we highlighted that  
 5 definition before, so what is meant in number 1  
 6 by artificial recharge, storage, and recovery of  
 7 source water in your view, what does that mean?  
 8 **A. That would be the physical injection of that**  
 9 **source water, the storing of that source water,**  
 10 **and then the recovery of that source water. So**  
 11 **three steps would be injection, storage, and**  
 12 **then eventual recovery.**  
 13 Q. And what is then meant in number 2 by diversion,  
 14 treatment, recharge, storage, and extraction and  
 15 distribution?  
 16 **A. That's defining the -- what the infrastructure,**  
 17 **the apparatus would be, so you would have to**  
 18 **have diversion from the source water, treatment**  
 19 **of the source water, physical recharge, storage**  
 20 **of that source water, extraction, or we could**  
 21 **say diversion of that source water, and then**  
 22 **distribution, in this case through municipal**  
 23 **pipeline.**  
 24 Q. Now, in the next definition, we find the  
 25 definition of artificial recharge, and that's

1 defined in a couple regulations, and that's  
2 already been testified in the record; is that  
3 right?  
4 **A. Yes.**  
5 Q. And in both of those regulations, it is also  
6 identified in your expert report, it means the  
7 use of source water to artificially replenish  
8 the water supply of the aquifer. Again, we find  
9 this definition of source water in artificial  
10 recharge, do we not?  
11 **A. Yes.**  
12 Q. And so we'd have to cross-reference once again  
13 the definition of source water to help to  
14 understand what artificial recharge means; is  
15 that true?  
16 **A. Yes.**  
17 Q. As you're applying this regulation, what do you  
18 think is meant by the concept of, quote,  
19 artificially replenish, end quote?  
20 **A. That would be adding to the supply of the**  
21 **groundwater source to restore the groundwater**  
22 **source, if there's a decline in it, so to add to**  
23 **the groundwater source.**  
24 Q. So in other words, in your view, and I think  
25 replenish is a simple term, as it relates to

1 water, the source water being the Little  
2 Arkansas River, none of that is actually  
3 injected into the aquifer. Is that the basis of  
4 your opinion?  
5 **A. That is. That is correct.**  
6 Q. Now let's talk about aquifer storage. It's  
7 defined in two regulations. The record is  
8 replete with the reference to those two  
9 regulations, so I'm not going to state them  
10 again. But it means the act of storing water in  
11 the unsaturated portion of an aquifer by  
12 artificial recharge for subsequent diversion and  
13 beneficial use. What is significant to you  
14 about the concept of storing water in the  
15 unsaturated portion of the aquifer?  
16 **A. That it's clearly putting water into the portion**  
17 **of the aquifer that does not contain**  
18 **groundwater.**  
19 Q. Let me ask you this: The very basis of the  
20 City's AMC proposal is the ability to re -- to  
21 accumulate AMC credits when the aquifer is fully  
22 saturated, isn't that the basis of the City's  
23 proposal?  
24 **A. Yes, fully or near fully saturated.**  
25 Q. So in other words, the Equus Beds Aquifer could

1 this regulation, it means to replenish or  
2 restore water into the aquifer, that's -- that's  
3 your view?  
4 **A. Yes.**  
5 Q. And it goes on to say, artificially replenish  
6 the water supply of the aquifer. So as it  
7 relates, then, to source water, if we look at  
8 this regulation as a whole, does this regulation  
9 mean that artificial recharge means to put  
10 source water, physically put source water into  
11 the aquifer?  
12 **A. Yes.**  
13 Q. The next definition that you outline in your  
14 expert report is aquifer storage. Let me talk  
15 just for a -- well, and let me back up. With  
16 respect to artificial recharge, does any  
17 artificial recharge occur as it relates to the  
18 City's aquifer maintenance credit proposal?  
19 **A. No, it's just merely water left in storage; that**  
20 **is not artificial recharge in any sense.**  
21 Q. And is that because with respect to the AMC  
22 proposal, no water is put into the aquifer?  
23 **A. That's right, no -- no outside water is added**  
24 **into the aquifer.**  
25 Q. And I should clarify my terminology, no source

1 be fully saturated and the City could still be  
2 accumulating AMC credits under their proposal;  
3 is that right?  
4 **A. Yes.**  
5 Q. So in that sense, would it essentially mean --  
6 be -- would the City's proposal essentially read  
7 the term unsaturated out of this definition?  
8 **A. Yes.**  
9 Q. Then this definition goes on to say, the  
10 unsaturated portion of an aquifer, and aquifer  
11 is also defined; is that true?  
12 **A. Yes.**  
13 Q. Okay. By artificial recharge for subsequent  
14 diversion and beneficial use. You just told me  
15 what artificial recharge means, and you said  
16 that that means replenishing the water supply by  
17 injecting source water into the aquifer. So now  
18 let's talk about the difference between ASR  
19 Phase II and an aquifer maintenance credit.  
20 With respect to ASR Phase II, water would be put  
21 into the unsaturated portion of the aquifer; is  
22 that true?  
23 **A. With a physical recharge credit, yes.**  
24 Q. But with an AMC, it doesn't matter if the  
25 aquifer is fully saturated or unsaturated; is

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1 that right?

2 **A. Correct, although the only way they could get --**

3 **claim an AMC is it would have to be somewhat**

4 **full, so yes.**

5 Q. So as this definition goes on, it says for

6 subsequent diversion. So we talked about how

7 there's the act of storing water in the

8 unsaturated portion, you told me that's the act

9 of injecting water for storage in the aquifer;

10 then it goes on to say by artificial recharge,

11 we talked about what artificial recharge means;

12 then it says, for subsequent diversion and

13 beneficial use, tell me what the significance of

14 the word subsequent is in your view as you read

15 this regulation.

16 **A. I think that -- that clearly states that there**

17 **has to be a put to have a take. So you have to**

18 **put water to be able to take water. It's quite**

19 **obvious you have to add to the source, store it**

20 **before you can divert it. Again, a put before a**

21 **take, it's pretty simple.**

22 **MR. OLEEN:** I -- I object and I'll

23 likely get overruled, but are we -- are we

24 talking about interpretations that

25 Mr. Boese utilizes in his experience as

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1 GMD2 manager, or is he just opining about

2 his interpretations of legal -- of legal

3 conclusions and interpretations?

4 **PRESIDING OFFICER:** My impression

5 it's the former.

6 **MR. OLEEN:** Okay.

7 **BY MR. STUCKY:**

8 Q. Now I'll ask the question, I guess, if we need

9 to. Mr. Boese, have you seen the word

10 subsequent in statutes and regulations before?

11 **A. I'm sure I have, it's right here, so, yes,**

12 **I've -- I've read that word before.**

13 Q. All right. As the word subsequent exists in

14 this regulation, use the word subsequent with

15 respect to an ASR Phase II credit in a sentence.

16 **A. Use the word subsequent?**

17 Q. Yes, how would that --

18 **A. For a physical recharge credit?**

19 Q. Yes.

20 **A. Injecting source water into the aquifer**

21 **establishes a physical recharge credit for**

22 **subsequent diversion.**

23 Q. Now use -- tell me if you can use the term

24 subsequent in a sentence with respect to the AMC

25 proposal.

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1 **A. I don't think I can. You want me to --**

2 Q. Because there's no -- and that's because no

3 water is put in the aquifer for subsequent

4 diversion; is that true?

5 **A. I guess if you want me to make a sentence, I**

6 **could say, with an AMC there is no water stored**

7 **in the aquifer for subsequent diversion. If you**

8 **want me -- if you want me to make a sentence, I**

9 **could do that.**

10 Q. Thank you, Mr. Boese. Let's move on to the

11 concept of recharge credit. Recharge credit is

12 found in two regulations, and we already

13 discussed that with Mr. Letourneau; is that

14 right?

15 **A. Yes.**

16 Q. And, again, it states, it means the quantity of

17 water that is stored in the basin storage area,

18 so what is meant by the quantity of water that

19 is stored in the basin storage area, what is

20 that referring to?

21 **A. That refers to the source water being injected**

22 **and stored into the basin storage area.**

23 Q. And then it says, that is available for

24 subsequent appropriation for beneficial use.

25 What is meant by subsequent appropriation for

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1 beneficial use in -- in the definition of

2 recharge credit?

3 **A. Again, it's that there must be a put before a**

4 **take, so to establish a recharge -- recharge**

5 **credit, that quantity of source water has to be**

6 **placed, stored into the basin storage area so**

7 **that it can be later diverted or pumped out, and**

8 **that's put the water in to take it out.**

9 Q. So once again, you can apply the definition of

10 recharge credit to a -- an ASR Phase II credit,

11 but are you able to fit an AMC credit within

12 this definition of recharge credit?

13 **A. No, because there is no quantity of water that**

14 **is placed into the -- that is stored, that is**

15 **placed into the basin storage area.**

16 Q. And then it goes on to say, for beneficial use

17 by an operator of the aquifer storage and

18 recovery system, and we already talked about

19 some words that you found significant in aquifer

20 storage and recovery system; is that right?

21 **A. Yes.**

22 Q. So, Mr. Boese, to sum up your discussion here,

23 do you believe that as you're applying -- well,

24 let me first ask you this: Other than the

25 statutes and regulations that we've already

1 touched on, are there other statutes and  
2 regulations that would significantly guide your  
3 analysis as you're trying to determine whether  
4 or not an aquifer maintenance credit is in  
5 compliance with current law?  
6 **A. Can you rephrase that, Dave, I didn't quite**  
7 **follow you?**  
8 Q. Well, we highlighted a number of regulations.  
9 **A. Uh-huh.**  
10 Q. And I didn't want to be limiting in your  
11 analysis in your expert report, were there other  
12 statutes or regulations that would significantly  
13 guide your opinion with respect to whether AMC  
14 credits are allowed by current law?  
15 **A. I think in relation to that, that would be the**  
16 **majority of them. Of course, there's other**  
17 **regulations that would be considered. Safe**  
18 **yield, K.A.R. 5-22-7, would obviously be**  
19 **considered.**  
20 Q. And I'm referring to the legality --  
21 **A. Okay.**  
22 Q. -- of the AMC proposal. Were these the main  
23 ones that would help clarify whether or not the  
24 AMC proposal is, in fact, in compliance with  
25 current law as it relates to whether an AMC

1 credit exists?  
2 **A. Yes. The only other one I can think of is the**  
3 **accounting regulation, the ASR accounting**  
4 **regulation.**  
5 Q. Tell me what that ASR accounting regulation is.  
6 **A. Just trying to remember the number, it's K.A.R.**  
7 **5-12, and we can look it up.**  
8 Q. Go ahead and turn to that.  
9 **A. Trying to remember the number off the top of my**  
10 **head.**  
11 Q. Is it K.A.R. 5-12-2(b) that you're referring to?  
12 **A. Yes.**  
13 Q. What does K.A.R. 5-12-2(b) add to our discussion  
14 that we just had?  
15 **A. It specifies what has to be included in the --**  
16 **in the ASR accounting report, and it lists a**  
17 **number of factors that must be included.**  
18 Q. Okay. For the record, which exhibit number are  
19 you on and what page?  
20 **A. I'm on 20 -- Exhibit 22 on page 129.**  
21 Q. And how does this regulation, what words jump  
22 out at you as far as adding to the discussion  
23 with respect to whether or not an AMC credit is  
24 defined by statute or regulation and allowed by  
25 statute and regulation?

1 **A. In K.A.R. 5-12-2(b), after you get through the**  
2 **number of things that may be included, it does**  
3 **specify that the accounting report shall**  
4 **specifically take into account the amount of**  
5 **natural recharge, and I think the next word is**  
6 **the important one, comma, artificial recharge.**  
7 **And, again, with AMCs, there would be no**  
8 **artificial recharge. And it does not say you**  
9 **take into account water that is not pumped out**  
10 **of the aquifer from -- from the City's water**  
11 **rights or from anybody else's water rights.**  
12 Q. And it also says in that next sentence that  
13 groundwater pumpage shall include recharge  
14 credits withdrawn as well as pumpage from all  
15 non-domestic wells. Is there any, the  
16 possibility for any recharge credits to be  
17 withdrawn with respect to the AMC proposal?  
18 **A. No.**  
19 Q. So as we sum this all up -- and I guess I should  
20 have asked this, is there any definition of  
21 aquifer maintenance credit anywhere in statute  
22 or regulation?  
23 **A. There is not.**  
24 Q. So as we sum this all up, is it your opinion  
25 that aquifer maintenance credits fall within the

1 definition of recharge credits that are allowed  
2 by current statute and regulations?  
3 **A. No.**  
4 Q. In your view, does the concept of aquifer  
5 maintenance credits even exist as being blessed  
6 by current statutes and regulations?  
7 **A. No.**  
8 Q. We've heard quite a bit of testimony about how  
9 the chief engineer provided a letter indicating  
10 that these aquifer maintenance credits were,  
11 quote, functional equivalent, end quote, of  
12 these ASR Phase II credits. Do you recall  
13 that -- that testimony?  
14 **A. Yes.**  
15 Q. Is the term functional equivalent found -- well,  
16 do this for me. Flip through all these statutes  
17 and regulations that are before you, and there's  
18 pages and pages of them, tell me where we find  
19 the term functional equivalent.  
20 **A. We do not.**  
21 **MR. OLEEN:** I object. I -- that's a  
22 dramatic tactic that I don't think is  
23 appropriate. If the witness wants to flip  
24 through all these statutes and regs and  
25 I'll wait here and, Mr. Stucky, we can do

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1 that. Otherwise, he can just be asked if  
 2 he knows if it's in there or not.  
 3 **BY MR. STUCKY:**  
 4 Q. I'll rephrase. Mr. Boese, previously, you  
 5 flipped through and read through all these  
 6 statutes and regulations. Would you agree with  
 7 me that the concept of functional equivalent is  
 8 not found anywhere in these statutes or  
 9 regulations?  
 10 **A. I have never seen that term in statute or**  
 11 **regulation before.**  
 12 Q. When you look at applications and permits, do  
 13 you sometimes look at those applications and  
 14 permits and say, you know what, this is pretty  
 15 close, this is close enough, this is a  
 16 functional equivalent, I'm going to approve it,  
 17 is that something you do in your everyday job?  
 18 **A. No.**  
 19 Q. Okay.  
 20 **A. We look at applications, whether they're for a**  
 21 **water permit, whether they're a change**  
 22 **application, and I'll even branch out if it's a**  
 23 **application for a cathodic protection bore hole,**  
 24 **I don't -- I don't have that flexibility, it's**  
 25 **black and white, it either meets the regulations**

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1 **or it does not.**  
 2 Q. So in other words, there's a level of precision  
 3 in compliance with the statutes and regulations  
 4 that's needed; is that true?  
 5 **A. Yes.**  
 6 Q. So in other words, this concept of functional  
 7 equivalent, in your view, it doesn't carry any  
 8 weight, is that what you're saying?  
 9 **A. Yes, I've never seen that term used before in**  
 10 **relationship to any water permit applications.**  
 11 Q. And similar to the old adage is close only  
 12 merits any kind of value in hand grenades and  
 13 horseshoes, is that what you're saying here?  
 14 **A. Yes.**  
 15 **MR. OLEEN:** Objection, I don't think  
 16 that's a question.  
 17 **MR. STUCKY:** I'll withdraw the  
 18 question and let Mr. Oleen have a sustained  
 19 objection, I'll withdraw it.  
 20 **BY MR. STUCKY:**  
 21 Q. Let's move on now to the concept of accounting  
 22 procedures as it relates to the expert report.  
 23 And the bottom of page 7 of your expert report,  
 24 you talked about some changes to these  
 25 accounting procedures. Is that something you

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1 discussed in your expert report on the bottom of  
 2 page 7?  
 3 **A. Yes.**  
 4 Q. Tell me what your concern was with respect to  
 5 changing the accounting procedures as it relates  
 6 to the City's proposal.  
 7 **A. Well, again, the accounting procedures don't --**  
 8 **don't note an aquifer maintenance credit. It**  
 9 **lists a bunch of things that should be in the**  
 10 **accounting report and some that have to be.**  
 11 **There is no -- there's no mention of aquifer**  
 12 **maintenance credits, water left in storage,**  
 13 **whatever we want to call them, there is no --**  
 14 **there is no part of that accounting process,**  
 15 **procedure through that regulation that includes**  
 16 **aquifer maintenance credits.**  
 17 Q. So if the City wants to proceed with its  
 18 proposal, is it your belief that there needs to  
 19 be a regulation change to the accounting  
 20 regulation?  
 21 **A. I think it would be much more than just the**  
 22 **accounting regulation, but that would be one of**  
 23 **them.**  
 24 Q. Is that one of the regulations that would need  
 25 to be changed in your view?

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1 **A. Yes.**  
 2 Q. Okay. But, in fact, I think you just testified  
 3 there would be a variety of regulations that  
 4 would merit changing, is that what you're  
 5 saying?  
 6 **A. Yes.**  
 7 Q. These regulations we've just talked about, they  
 8 were -- they were passed or adopted by --  
 9 sometime long before this concept of aquifer  
 10 maintenance credits was proposed by the City.  
 11 Is that a true statement?  
 12 **A. Yes, in fact, these -- these regulations and**  
 13 **these definitions had to be -- had to be made**  
 14 **when ASR Phase I was being permitted because we**  
 15 **didn't have any definitions like this in the**  
 16 **Kansas water regulations or statutes, so they**  
 17 **had to be formulated at that time to be able to**  
 18 **even review the ASR Phase I application. This**  
 19 **was a new project, no other ASR project in the**  
 20 **state.**  
 21 Q. You already answered, I think, my question, you  
 22 testified earlier that you were involved in the  
 23 formulation of these regulations based on your  
 24 role with the District when ASR Phase I was  
 25 being consummated. Is it your belief that as

1 these regulations were promulgated, the concept  
2 and what was contemplated was ASR Phase I  
3 credits and actually injecting water into the  
4 aquifer?

5 **A. Yes, that was the only thing that was**  
6 **contemplated in relationship to those was a**  
7 **physical injection of source water into the**  
8 **aquifer.**

9 Q. Turn with me to page 9 of your expert report.  
10 On page 9 of your expert report, you talk about  
11 this concept of the source water and the same  
12 local source of supply in your expert report --  
13 in your expert report. In a nutshell, tell me  
14 what you're talking about in that second  
15 paragraph.

16 **A. Well, AMCs would be a different source of water**  
17 **that we don't even have a definition of. We**  
18 **have a definition for -- for groundwater,**  
19 **surface water, and recharge credits; we do not**  
20 **have a definition for aquifer maintenance**  
21 **credits. That is an undefined source of water.**  
22 **I -- I don't even know how to define it, to be**  
23 **honest with you. It's -- it's groundwater left**  
24 **in storage. We have no definition that even**  
25 **comes close to an AMC.**

1 Q. And that's what you're stating with -- with your  
2 concern in that paragraph that it's a completely  
3 different source of water, is that what you're  
4 saying?

5 **A. Yeah, an undefined source, but it is a -- it is**  
6 **a different source of water.**

7 Q. Well, we talked about conditions in the chief  
8 engineer's order to modify the hearing and --  
9 and schedule dated September 27, 2018, and it  
10 states the proposed changes must relate to the  
11 same local source of supply. Is that something  
12 that's been stated previously?

13 **A. Yes, I think so.**

14 Q. How does that relate to an ASR credit for Phase  
15 II versus an AMC credit?

16 **A. Well, ASR Phase II physical recharge is a**  
17 **physical -- is a recharge credit as defined as a**  
18 **source of supply. AMCs are not defined, it**  
19 **would not be the same source of supply.**

20 Q. So in other words, in your view, is the City  
21 seeking to change the local source of supply  
22 pursuant to their permits?

23 **A. With an AMC concept, yes.**

24 **MR. OLEEN:** Mr. Stucky, point of  
25 clarification, would you mind directing me

1 to the chief engineer's order that you just  
2 referred to? It was some sort of --

3 **MR. STUCKY:** It was September 27,  
4 2018, it was called chief engineer's order  
5 to modify hearing and schedule.

6 **MR. OLEEN:** September 27, 2018,  
7 thank you.

8 **A. I -- I do believe the current hearing**  
9 **notification also states that, I think we may**  
10 **have that if we need to provide it, that**  
11 **Ms. Owen submitted.**

12 **BY MR. STUCKY:**

13 Q. Yeah, let me just ask without doing -- flipping  
14 through the record. Do you agree that the  
15 current orders of our current hearing officer  
16 also have a condition that there must be a  
17 relation to the same local source of supply?

18 **A. I believe it does, I think it was a similar**  
19 **language.**

20 Q. Okay. Let's move on to the concept of senior  
21 water rights. Turn with me to Exhibit 21. And,  
22 actually, as you're turning to it, I'm going to  
23 ask you this question: If I were to tell you  
24 that Exhibit 21 represents the Kansas Water  
25 Appropriation Act, would you have reason to

1 doubt that that's what that exhibit is, as  
2 you're turning to it?

3 **A. As I'm finding it. I put it on the wrong side**  
4 **of me, I'm sorry. Yes, it is the Kansas Water**  
5 **Appropriation Act.**

6 Q. What is the concept of first in time, first in  
7 right as is embedded in this act?

8 **A. The -- the applicant that files for an**  
9 **application, for a water permit application**  
10 **first has -- and is approved has right to that**  
11 **water first as compared to someone that files**  
12 **second. So priority matters in water**  
13 **appropriation, senior water rights have right to**  
14 **that water before the junior water right holder**  
15 **does.**

16 Q. With respect to an aquifer maintenance credit,  
17 if no water is actually being put in the aquifer  
18 by the City and these recharge credits are later  
19 withdrawn, whose water is being appropriated?

20 **A. It would be the --**

21 **MR. MCLEOD:** I'm going to object to  
22 that question as phrased because I don't  
23 think people own water under the Kansas  
24 framework.

25 **PRESIDING OFFICER:** That's fair, can



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1 you rephrase?  
 2 **BY MR. STUCKY:**  
 3 Q. How is -- well, let's go to K.S.A. 82a-702.  
 4 What does K.S.A. 82a-702 tell us, Mr. Boese?  
 5 **A. The title is Dedication of Use of Water, and it**  
 6 **states, all water within the State of Kansas is**  
 7 **hereby dedicated to the use of the people of the**  
 8 **state, subject to the control and regulation of**  
 9 **the State in the manner herein described.**  
 10 Q. So in other words, is this telling us that water  
 11 within the Equus Beds Aquifer is dedicated to  
 12 the people of the State of Kansas that live  
 13 within the area of that aquifer?  
 14 **A. It's, yeah, stating all water within Kansas is**  
 15 **dedicated to the people of the state, so the**  
 16 **people that live locally, it would be**  
 17 **dedicated -- I shouldn't say live, those that**  
 18 **are using it locally, it would be dedicated to**  
 19 **those individuals.**  
 20 Q. So just applying this statute, when it comes to  
 21 withdrawing an AMC credit, apply this statute to  
 22 the concept of withdrawing an AMC credit, how  
 23 does this statute relate to that?  
 24 **A. Well, because we're in an over-appropriated**  
 25 **aquifer, all the water has already been**

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1 **dedicated in the Wichita well field to other**  
 2 **users, including the City of Wichita with their**  
 3 **native water rights and irrigation water rights**  
 4 **and the stock watering water rights, so AMCs,**  
 5 **without adding to the supply, would have no**  
 6 **right to that water.**  
 7 Q. And is that because the water would already have  
 8 been dedicated to others pursuant to this  
 9 statute?  
 10 **A. Through their appropriations, their existing**  
 11 **appropriations, yes.**  
 12 Q. So do you believe that the City's AMC proposal  
 13 violates the very fundamental nature of the  
 14 Kansas Water Appropriation Act?  
 15 **A. Yes, that water's already dedicated to the**  
 16 **senior water right holders in the -- in the**  
 17 **Wichita well field area. Without adding a**  
 18 **supply, there can be no additional**  
 19 **appropriation.**  
 20 Q. So in your view, does it violate the concept of  
 21 first in time, first in right as used in the  
 22 Kansas Water Appropriation Act, the City's AMC  
 23 proposal?  
 24 **A. Yes, because they wouldn't have a right to the**  
 25 **water anyway.**

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1 Q. But I am saying even if we assume that somehow  
 2 these aquifer maintenance credits somehow met  
 3 these regulations, if you assume that with me  
 4 for a moment.  
 5 **A. Okay.**  
 6 Q. Would you agree with me that these aquifer  
 7 maintenance credits, because no water is put in  
 8 the aquifer, would violate senior water right  
 9 holders' rights to the water and, therefore,  
 10 would violate the concept of first in time and  
 11 first in right?  
 12 **A. Yes.**  
 13 Q. And, in fact, Chief Engineer Pope said in his  
 14 prior orders that any water above the 1993  
 15 levels would be avail -- available for injecting  
 16 water into the aquifer, but any water below the  
 17 1993 levels, what did he say with respect to who  
 18 that water was dedicated to?  
 19 **A. Well, he said that -- he stated that that was**  
 20 **Equus Beds groundwater below the 1993 levels.**  
 21 **MR. OLEEN:** I object, I think it  
 22 misstates the order. We have the order, we  
 23 can all read, I think it -- I forget the  
 24 paragraph number, but we have it. I think  
 25 it misstates what the order says.

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1 **MR. STUCKY:** He testified to that  
 2 earlier in his testimony, I brought that  
 3 specifically up and he testified to it.  
 4 **PRESIDING OFFICER:** Is this in the  
 5 ASR approval order?  
 6 **MR. STUCKY:** That's right.  
 7 **PRESIDING OFFICER:** The Phase II  
 8 approval order?  
 9 **MR. STUCKY:** Yeah, that's right.  
 10 **A. It's in the -- the Phase I approval order.**  
 11 **MR. STUCKY:** I'm sorry, he testified  
 12 to it earlier.  
 13 **MR. MCLEOD:** Just to clean up as to  
 14 form of the question and answer, I believe  
 15 the question was who is the water below the  
 16 '93 levels dedicated to, and the witness  
 17 said it's Equus Beds groundwater, and the  
 18 question and answer don't match. The  
 19 answer is not responsive to who is it  
 20 dedicated to.  
 21 **PRESIDING OFFICER:** And I'm afraid  
 22 I'm not following. So your -- are you  
 23 referring to a condition in the Phase I and  
 24 Phase II approvals? This is about the  
 25 lower -- the water below the minimum index

1 level?

2 **MR. STUCKY:** That's right. I can go  
3 back to the order if we want to circle back  
4 to it.

5 **PRESIDING OFFICER:** Well, just --  
6 I'm sorry to drag it out, but I just want  
7 to make clear what you're referring to, so  
8 if you do want to ask about that, yeah, I'd  
9 like to know which condition you're ...

10 **BY MR. STUCKY:**

11 Q. Mr. Boese, can you turn back to, I believe it's  
12 Exhibit 26 and tell us the condition you're  
13 referring to.

14 **A. It's conclusion number 13, which is on page 12,**  
15 **labeled page 12 of 21 of Exhibit 26.**

16 Q. And what does that conclusion tell us?

17 **A. I'll go ahead and read it for the record again,**  
18 **that if the project is operated so that recharge**  
19 **credits cannot be withdrawn if the static water**  
20 **level in the index well is below the lowest**  
21 **index water level for that index well, the**  
22 **public interest in not diverting Equus Beds**  
23 **groundwater will be protected.**

24 **So to answer your question again, the chief**  
25 **engineer is concluding here that the public**

1 Q. Do you believe that some cap is appropriate, at  
2 least for the ASR Phase II credits?

3 **A. I think that can be an appropriate condition.**

4 Q. And would you agree with what Mr. McLeod often  
5 says that some cap for the ASR Phase II credits  
6 is better than no cap at all?

7 **A. Yes.**

8 Q. So as it relates to the City's proposal, if --  
9 if we're trying to find common ground, is that

10 at least one aspect of the City's proposal that  
11 you would agree with, that there has to -- and  
12 I'm not saying that you agree with the number,  
13 I'm just saying that you agree with the fact  
14 that there should be a cap on the accumulation  
15 of ASR Phase II credits?

16 **A. I think that would be a reasonable condition to**  
17 **have a cap of the physical recharge credits.**

18 Q. And in your view, there can't be a cap of the  
19 AMC credits because there's no such thing, is  
20 that what you're saying?

21 **A. That -- that's correct.**

22 Q. Do you believe that the 120,000 acre-foot cap is  
23 appropriate, or do you think it's too high based  
24 on your analysis of the City's proposal?

25 **A. That -- that's way more than the City claims to**

1 interest is protected by not diverting, as he  
2 stated, Equus Beds groundwater. That implied  
3 that below the 1993 levels is Equus Beds  
4 groundwater, not recharge credits, that is  
5 already dedicated to other users. As we know  
6 because the area is fully over-appropriated.

7 Q. Mr. Boese, you also opine in your expert report  
8 that this concept of withdrawing 120,000  
9 acre-feet of credit violates the Kansas Water  
10 Appropriation Act as it relates to the AMC  
11 proposal. Why does it violate the KWAA? And I  
12 think you already answered that, is it for the  
13 same reason you just stated?

14 **A. Right, the water is already dedicated to other**  
15 **users, the area is fully -- or**  
16 **over-appropriated, as we noted with the 30**  
17 **safe yields, and the 30 plus that weren't**  
18 **admitted all showed that also, so that -- that**  
19 **water is already dedicated. Unless the City**  
20 **adds to the source, it cannot have an**  
21 **appropriation.**

22 Q. So, Mr. Boese, you listened to the discussion  
23 with respect to having a 120,000 acre-foot cap;  
24 is that right?

25 **A. Yes.**

1 **need in an extreme 1 percent drought, so I don't**  
2 **know why they would need 120,000 acre-feet, it**  
3 **seems excessive.**

4 Q. Well, Mr. McCormick told me that that 120,000  
5 acre-feet was based on the fact that that's the  
6 room in the aquifer for storage above the 1993  
7 levels. Do you recall that statement?

8 **A. Yes.**

9 Q. Do you believe that that's an appropriate way to  
10 define what that cap should be, to consider all  
11 the available storage in that area?

12 **A. No, I'm not sure how it even relates to what the**  
13 **City's needs are; it just happens to be the**  
14 **bathtub, if it was completely full between the**  
15 **'93 and the top of the -- of the aquifer. I --**  
16 **I don't know why the City would claim ownership**  
17 **of 120,000 acre-feet just because that storage**  
18 **area can hold that much.**

19 Q. And this is just a simple point, but there's  
20 other permit holders that are appropriating --  
21 appropriating out of that basin storage area, is  
22 that true, other than the City?

23 **A. Yes.**

24 Q. And so in other words, there's other users that  
25 would be utilizing that 120,000 acre-feet

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1 already, is that -- is that what you've stated?  
 2 **A. Yes.**  
 3 Q. And so is that part of the reason that just  
 4 simply saying, you know what, hey, there's  
 5 120,000 acre-feet available for storage in this  
 6 area, let's make the cap consistent with that,  
 7 is that part of the reason you don't think that  
 8 that basis for coming up with a cap is a  
 9 scientific basis for -- for proposing a cap?  
 10 **A. It -- it seems very arbitrary to me just to**  
 11 **claim the cap as equal to the storage volume,**  
 12 **I'm not sure how -- how that is conceived.**  
 13 Q. Mr. Boese, both the Division of Water Resources  
 14 and the City of Wichita experts testified to the  
 15 fact repeatedly that these caps are subject  
 16 to -- this 120,000 acre-foot cap would be  
 17 subject to 19,000 acre-feet of withdrawal each  
 18 year. Do you recall that testimony?  
 19 **A. Yes.**  
 20 Q. And that was the official testimony of the City,  
 21 the official testimony of the Division of Water  
 22 Resources that these are subject to withdrawal  
 23 of 19,000 acre-feet a year. How many permits  
 24 does the City have currently?  
 25 **A. For Phase II?**

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1 Q. For Phase II?  
 2 **A. They have 30 and those are the 30 that are**  
 3 **specified in the City's proposal as the ones**  
 4 **that they are desiring the changes to.**  
 5 Q. Mr. Boese, if you were to add up the water that  
 6 the City could withdraw in each -- each year  
 7 under these current permits, tell me what that  
 8 total quantity would be.  
 9 **A. Just so we're clear, we're talking about the**  
 10 **list that the City has in the -- in their**  
 11 **exhibit notebook, which is -- I guess, perhaps**  
 12 **there's not a page number, it's under cover**  
 13 **letter of the -- identifies the 30 ASR Phase II**  
 14 **permits that they are asking for the changes to,**  
 15 **those total 18,000 acre-feet.**  
 16 Q. Okay. So if you were to add them up, to clarify  
 17 the record that's been made by the Division of  
 18 Water Resources and the City throughout this  
 19 hearing, they could only be withdrawn at a total  
 20 of 18,000 acre-feet a year; is that right?  
 21 **A. That would be the total of these 30 that are**  
 22 **indicated here. I'm not talking about any of**  
 23 **the Phase I permits. So the 30 that are listed**  
 24 **here, the first 24 are authorized for 500**  
 25 **acre-feet each, which would equal 12,000**

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1 **acre-feet; and the last six that are identified**  
 2 **are each authorized for 1,000. 12,000 plus**  
 3 **6,000 would be 18,000 acre-feet. I'm not sure**  
 4 **where the 19,000 number has come from, other**  
 5 **than perhaps they included one of the ASR Phase**  
 6 **I wells, I'm thinking perhaps the one that was**  
 7 **put in at the failed recharge basin number --**  
 8 **number 1 that now has a recharge and recovery**  
 9 **well which is part of Phase I.**  
 10 Q. But if you were to simply add up the 30 permits  
 11 that are actually referenced in the City's  
 12 proposal, this number of 19,000 would be a  
 13 misstatement by both the City and the Division  
 14 of Water Resources; is that correct?  
 15 **A. According to my research, it's 18,000 acre-feet.**  
 16 **And I actually verified that last night by**  
 17 **looking in at the DWR WRIS system, the Water**  
 18 **Right Information System. And, again, the first**  
 19 **24 are 500 acre-feet, and the last six are 1,000**  
 20 **acre-feet each.**  
 21 Q. Mr. Boese, there has been a discussion about  
 22 what the impact -- just bear with me for a  
 23 moment, Mr. Boese. Assume with me that there's  
 24 120,000 acre-feet of credits, of AMC credits  
 25 that are accumulated, okay, you follow me?

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1 **A. Uh-huh.**  
 2 Q. If those could be withdrawn at a rate of  
 3 18,000 acre-feet per year --  
 4 **A. Okay.**  
 5 Q. -- when those credits are withdrawn, if no water  
 6 was put into the aquifer pursuant to the AMC  
 7 credit, in your view, could that cause harm to  
 8 the aquifer when those credits are withdrawn?  
 9 **A. It would certainly cause the aquifer to decline**  
 10 **when those recharge credits were withdrawn.**  
 11 Q. Okay. And based on your 28 years of experience  
 12 working for the District and having analyzed  
 13 data with regard to water declines, what do you  
 14 think the effect of the aquifer would be if  
 15 120,000 acre-feet of water are withdrawn over a  
 16 course of 18,000 acre-feet a year?  
 17 **A. Well, certainly if that's in combination with**  
 18 **the City's existing water rights and irrigation**  
 19 **rights in the area, that would cause a**  
 20 **substantial decline in the aquifer.**  
 21 Q. Could that have an effect on water quality?  
 22 **A. It certainly could. As we discussed earlier, it**  
 23 **would increase that hydraulic gradient, which**  
 24 **would cause the salinity movement from both the**  
 25 **Burton and the Arkansas River area, and it**

1 **could also impact shallower wells such as**  
2 **domestic wells or shallow irrigation wells.**  
3 Q. Could it have an impact to minimum desirable  
4 streamflow if there was aquifer declines?  
5 **A. It most certainly could. We saw declines in the**  
6 **brief 2011 and 2012 drought.**  
7 Q. In your view, could these declines caused by  
8 lowering the minimum index level or withdrawing  
9 these credits, could it cause impairment to  
10 other wells?  
11 **A. It could, it's something that should be**  
12 **evaluated.**  
13 Q. Well, based on your 28 years of experience and  
14 having examined impairment and wells, what is  
15 your expert opinion in that regard, do you  
16 believe the City's proposal has the potential to  
17 create impairment as it relates to other wells  
18 in the -- in the area of the City's well field?  
19 **A. Yes, that's why it was -- it was determined that**  
20 **we -- the City could not withdraw below the 1993**  
21 **levels, so below that could most certainly**  
22 **impair existing water rights.**  
23 Q. But also as it relates to withdrawing AMC  
24 credits, do you think that has the potential to  
25 impair wells in the area?

1 Q. Well, an ASR artificial recharge credit, what  
2 are the types of beneficial uses with -- with  
3 respect to an ASR II credit?  
4 **A. Are you talking about the withdrawal from the**  
5 **Little Arkansas River?**  
6 Q. Yeah.  
7 **A. Okay. I follow you now. The City water permit**  
8 **for Phase II, which is water permit 46,627,**  
9 **allows for both municipal use and recharge use,**  
10 **artificial recharge use.**  
11 Q. Okay. And under the City's current proposal,  
12 the City could take overflow water from the  
13 Little Arkansas, treat it, and use it directly  
14 in the City currently as that permit exists; is  
15 that right?  
16 **A. It is authorized for municipal use, yes.**  
17 Q. And so the beneficial use, if the City were to  
18 directly divert right now, would be municipal  
19 use; is that right?  
20 **A. If they diverted and took that treated water**  
21 **to -- to the City, that would be municipal use,**  
22 **yes.**  
23 Q. With -- now, you listened to Mr. Letourneau's  
24 testimony where he said that when that water is  
25 taken directly to the City pursuant to an AMC

1 **A. Yes, that -- that would cause a decline in the**  
2 **water table.**  
3 Q. Well, and my question was do you think it could  
4 cause impairment to wells in the area?  
5 **A. Yes, I'm sorry.**  
6 Q. And there is a distinction drawn between  
7 impairment to wells and overall impairment to  
8 the aquifer by lowering the water table. Do you  
9 believe that the City's proposal, both with  
10 respect to withdrawing AMC credits and with  
11 respect to lowering the minimum index level,  
12 could cause impairment on both -- to both  
13 aspects?  
14 **A. It would certainly cause decline in the aquifer,**  
15 **we usually don't say impairment of the aquifer**  
16 **but decline in the aquifer, and could cause**  
17 **impairment to other water users.**  
18 Q. With respect to an aquifer maintenance credit --  
19 well, strike -- strike that. With respect to an  
20 ASR Phase II credit, what were the two types of  
21 beneficial uses as outlined in page 9 of your  
22 expert report?  
23 **A. I'm sorry, I'm going to go ahead and flip to**  
24 **that so I can understand what -- what question**  
25 **you're asking.**

1 credit, that creates a recharge credit when it's  
2 used. Do you recall that testimony?  
3 **A. Yes.**  
4 Q. In your view, though, when that water is used in  
5 the City, does that create both -- does that  
6 create two types of uses at the same time  
7 essentially?  
8 **A. It would, it would be being used for --**  
9 **beneficially for municipal use, that would be**  
10 **the actual use, and somehow that would also be**  
11 **claimed as a recharge credit, which would be two**  
12 **uses of that same quantity of water.**  
13 Q. In your 28 years of experience in looking at  
14 permits and applications and water rights and  
15 applying statutes and regulations to them, have  
16 you ever seen a situation where 1 gallon of  
17 water can be used for two different beneficial  
18 uses at the exact same time?  
19 **A. Not at the same time. We have several permits**  
20 **in the District that have dual uses, but it's --**  
21 **it's one or the other at a particular moment in**  
22 **time. It can be used, for instance, for**  
23 **recreational use to fill a pond or for**  
24 **irrigation to water a green area at a housing**  
25 **development. That same gallon can't be used for**

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1 **both.**  
 2 Q. The same gallon can't be used for two beneficial  
 3 uses at the exact same time, is that your  
 4 testimony?  
 5 **A. It cannot, that's correct.**  
 6 Q. But is it your opinion that the City's proposal  
 7 utilizes an AMC -- that when this AMC credit  
 8 concept is pursued, that same gallon of water is  
 9 used for two beneficial uses at the exact same  
 10 time, is that your testimony?  
 11 **A. Yes.**  
 12 Q. So have you ever seen a situation before where  
 13 someone is able to use a gallon of water for  
 14 their consumptive purposes and then  
 15 automatically get another gallon of water for a  
 16 later consumptive purpose, have you ever seen  
 17 that kind of concept before?  
 18 **A. No.**  
 19 Q. In your view, does the City essentially get a  
 20 two for one, if you will, 2 gallons of water for  
 21 every 1 gallon of water they send to the City  
 22 for municipal use?  
 23 **A. Under this proposal, they would get a beneficial**  
 24 **use of that gallon for municipal and a**  
 25 **beneficial use for recharge credit at the same**

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1 **time, so it would be -- would be a two for one,**  
 2 **two uses for 1 gallon.**  
 3 Q. Have you ever seen a situation where essentially  
 4 without any kind of change application, without  
 5 any kind of new application or new permit being  
 6 proposed a water right user can come before a  
 7 hearing officer or otherwise and say, I'd like  
 8 to double my water right, have you ever seen  
 9 that happen before?  
 10 **A. No.**  
 11 Q. Is that another reason why you think that this  
 12 proposal should be denied?  
 13 **A. Yes.**  
 14 **MR. STUCKY:** I would move to admit  
 15 Exhibit 39 into evidence, I think it's been  
 16 adequately covered now.  
 17 **MR. MCLEOD:** And I'm still going to  
 18 object because I think there are persisting  
 19 foundational issues, and I would suggest  
 20 that we leave that question to be decided  
 21 after Mr. Boese has been cross-examined.  
 22 **MR. STUCKY:** I think he touched on  
 23 every one of those -- those points that  
 24 were highlighted, whether it be MDS or  
 25 water quality, I think he testified to all

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1 those already.  
 2 **MR. MCLEOD:** I think there will be  
 3 questions whether he testified to them  
 4 competently.  
 5 **MR. STUCKY:** And my position is  
 6 that's not a basis to exclude an expert  
 7 report from admission. It's certainly  
 8 subject to later cross, but that's not a  
 9 reason to exclude it.  
 10 **PRESIDING OFFICER:** In my view,  
 11 sufficient foundation has been laid.  
 12 Again, this is an administrative context,  
 13 technical rules of evidence are not  
 14 strictly applied, and I believe that  
 15 Mr. Boese has been limited based on  
 16 objection to items in the expert report,  
 17 I've seen that that has been tracked, and  
 18 I'm going to overrule the objection and  
 19 admit Exhibit 39.  
 20 **BY MR. STUCKY:**  
 21 Q. So, Mr. Boese, for everyone's benefit, let's sum  
 22 this up in two minutes or less. Do you believe  
 23 that the City's proposal with respect to  
 24 lowering the minimum index levels based on your  
 25 28 years of experience where you've been

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1 involved with the Groundwater Management  
 2 District, do you believe that's good for the  
 3 aquifer?  
 4 **A. No.**  
 5 Q. Do you believe that the potential to withdraw up  
 6 to 120,000 acre-feet of AMC credits is good for  
 7 the aquifer?  
 8 **A. No.**  
 9 Q. Do you believe, subject to a cap on the ASR II  
 10 credits, do you believe that the City's proposal  
 11 should be approved?  
 12 **A. I'm sorry, can you restate that?**  
 13 Q. Do you believe the City's AMC proposal should be  
 14 approved?  
 15 **A. No.**  
 16 Q. What is -- based on the deference afforded to  
 17 the Groundwater Management District and an  
 18 agency's interpretation of this proposal, what  
 19 is the official position of you, Mr. Boese, on  
 20 behalf of the Groundwater Management District as  
 21 it relates to the City's proposal?  
 22 **A. It should be denied.**  
 23 **MR. STUCKY:** No further questions.  
 24 **PRESIDING OFFICER:** And do I have --  
 25 do I understand when he says your official

1 position, does that reflect the view of  
2 your board?  
3 **A. It does, they have passed a motion.**  
4 **PRESIDING OFFICER:** Okay. It's five  
5 till 5:00. I think that's a good place to  
6 stop, and we will meet tomorrow morning at  
7 8:30.  
8 (Whereupon, the proceedings were  
9 adjourned at 4:57 p.m.)

1 C E R T I F I C A T E  
2 STATE OF KANSAS )  
3 SEDGWICK COUNTY ) ss:  
4 I, Nancy L. Rambo, a Certified Shorthand  
5 Reporter, within and for the State of Kansas, do  
6 hereby certify that the foregoing is a true and  
7 correct transcript of the proceedings had at the  
8 time and place hereinbefore set forth.  
9 I further certify that I am not a relative  
10 or employee or attorney or counsel of any of the  
11 parties, nor am I a relative or employee of such  
12 attorney or counsel, nor am I financially  
13 interested in the action.  
14 WITNESS my hand and official seal at  
15 Wichita, Sedgwick County, Kansas, this 18th day of  
16 March, 2020.  
17  
18 NANCY L. RAMBO, R.P.R., C.S.R.  
19 Registered Professional Reporter  
20 Certified Shorthand Reporter

21 Costs:  
22  
23  
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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage v*

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*Formal Hearing*  
*Vol. IX*  
*March 4, 2020*

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OF STATE KANSAS  
BEFORE THE DIVISION OF WATER RESOURCES  
KANSAS DEPARTMENT OF AGRICULTURE

In the Matter of the City )  
of Wichita's Phase II ) Case No.  
Aquifer Storage and ) 18 WATER 14014  
Recovery Project in Harvey )  
and Sedgwick Counties, )  
Kansas, )  
Pursuant to K.S.A. 82a-1901  
and K.A.R. 5-14-3a

FORMAL HEARING  
VOLUME IX

This matter came on for Formal Hearing  
before Constance C. Owen, Presiding Officer, at  
the First Mennonite Church, 427 West Fourth,  
Halstead, Harvey County, Kansas, commencing at  
8:32 a.m., on the 4th day of March, 2020.

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A P P E A R A N C E S

City of Wichita, Department of Public  
Works and Utilities, appears by their attorney,  
Brian K. McLeod, Deputy City Attorney, 435 North  
Main, 13th Floor, Wichita, Kansas 67202.

Equus Beds Groundwater Management District  
No. 2 appears by their attorneys, Thomas A. Adrian  
and David J. Stucky, Adrian & Pankratz, 301 North  
Main, Suite 400, Newton, Kansas 67114. Also  
present was Tim Boese.

Division of Water Resources appears by  
their attorneys, Aaron B. Oleen and Stephanie  
Murray, Kansas Department of Agriculture, 1320  
Research Park Drive, Manhattan Kansas 66502.

Intervenors appear by their attorney,  
Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
Kansas 67056.

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**PRESIDING OFFICER:** Okay. It's now  
8:30 a.m. on March 4th, 2020, we are  
continuing with our hearing regarding the  
City of Wichita's proposal to modify their  
ASR Phase II project. And yesterday, I  
believe the GMD finished their direct  
examination of Mr. Boese. And, Mr. McLeod,  
you have cross.

**MR. MCLEOD:** Thank you.

**CROSS-EXAMINATION  
BY MR. MCLEOD:**

Q. Mr. Boese, yesterday Counsel asked you a  
question about K.S.A. 82a-702 as to whether that  
statute, which speaks to dedicating waters of  
the State to the people of Kansas, meant that  
the statute was dedicating water to the people  
who live and use water in the local aquifer.  
And I think you -- I think you concurred with  
Counsel that you believe that that statute does,  
in fact, dedicate the water in the aquifer to  
the local users. Is that what you said?

**A. I think that's a mischaracterization. I believe  
Mr. Stucky did say live, and I believe I tried  
to correct that. And if I wasn't clear, I**

1 intended to be, I said it's dedicated to the  
2 people of the State of Kansas; however, the  
3 local users use it so it would be not  
4 specifically necessarily dedicated to them, but  
5 that's the area that they're in so they're the  
6 ones using it so it would be their rights.

7 Q. I'm going to ask the reporter to read back the  
8 witness's testimony of yesterday for the record.  
9 A. And, again, if I misstated, I will correct that,  
10 but I believe Mr. Stucky said live and I -- I  
11 said live and I said I mean use the water.

12 (At this time, the reporter read  
13 the designated portion at Volume  
14 VIII, page 2257, lines 3 - 19.)

15 BY MR. MCLEOD:

16 Q. So the City's not an individual, is it,  
17 Mr. Boese?

18 A. I think, again, you're mischaracterizing it. By  
19 individual, I meant a water right holder. And I  
20 would like to go ahead and further clarify that  
21 by dedicated, I mean that the water is fully  
22 appropriated in the Wichita well field and,  
23 therefore, it's already dedicated to other  
24 users.

25 Q. So one of the reasons, Mr. Boese, that I asked

1 them.

2 Q. So in a similar vein, Mr. Boese, I want to ask  
3 you about -- about your concept of public  
4 interest because at some of the District's board  
5 meetings, you have made statements  
6 differentiating between the public interest and  
7 the local public interest. And to the extent  
8 that you see a difference between those  
9 concepts, could you explain them for the hearing  
10 officer?

11 A. Can you state where I've said that, a difference  
12 between local and public interest and public  
13 interest, do you have -- do you have a reference  
14 I can look at, board meeting minutes or a  
15 document where I've said that?

16 Q. I haven't brought a document. Are you saying  
17 you don't recall a board meeting where you  
18 expressed that the purpose of the District was  
19 to address and express the local public  
20 interest?

21 A. I do think that is one of the roles of a  
22 groundwater management district. The GMD Act  
23 specifically states it's in the public interest  
24 for a local groundwater management district to  
25 be formed for managing the resource. I believe

1 the questions about this disturbing testimony,  
2 I'm sure you have noticed in the public comments  
3 there have been many local residents who have  
4 expressed the sentiment that the City of  
5 Wichita, with its corporate borders some  
6 31 miles away, should not be able to come out to  
7 the Equus Beds Aquifer and have water. Do you  
8 share that sentiment, Mr. Boese?

9 A. I do not, it's a first in time, first in right;  
10 it doesn't matter necessarily where the entity  
11 is located at, it's where the application is  
12 made.

13 Q. And being a person who testified yesterday that  
14 you looked at the black-and-white letter of the  
15 statute, would you agree with me that when you  
16 read the black-and-white letter of K.S.A.  
17 82a-702 it doesn't say anything about local  
18 users?

19 A. I would agree. But I also was pointing to black  
20 and white when I'm reviewing regulations for  
21 applications. I don't know that I specifically  
22 said statute, but I -- I wasn't in that context  
23 talking about regulations. When I'm reviewing  
24 an application, I use our District regulations,  
25 and those are black and white when I review

1 you can connect the dots and say that's -- the  
2 District should be an expression of the public  
3 interest. We represent 2,000 water right  
4 holders from the City of Wichita down to the  
5 smallest irrigation user, we have to be able to  
6 represent their public interest.

7 Q. When the District is evaluating public interest  
8 for purposes of whether a particular application  
9 or proposal meets the public interest, is the  
10 District doing that with a view to the state  
11 public interest or the local public interest  
12 that you refer to?

13 A. I'm a little confused when you said when  
14 reviewing an application based on the public  
15 interest. We review applications based on our  
16 rules and regulations which are local to the  
17 Groundwater Management District.

18 Q. Don't the rules and regulations, many of them,  
19 refer to the public interest?

20 A. The Groundwater Management District rules and  
21 regulations?

22 Q. And the state statutes, specifically the  
23 statutes that relate to evaluation of permit and  
24 permit change applications?

25 A. Well, you said statutes and now you said

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1 **regulations, which one are you referring to?**  
 2 Q. Well, Mr. Boese, I don't want to get into a  
 3 protracted argument with you, let's just go back  
 4 and do this very slowly so you can follow. If  
 5 you were to look at the statute that governs new  
 6 permit applications, is one of the -- is one of  
 7 the considerations for a new permit application  
 8 that the permit application, if granted, would  
 9 not unreasonably impact the public interest?  
 10 **A. Yes.**  
 11 Q. And when someone makes such an application and  
 12 it comes to the District Board for review, is  
 13 that one of the components that the District  
 14 Board speaks to when they evaluate the  
 15 application?  
 16 **A. Again, I'm just a little confused because the**  
 17 **District Board doesn't review most applications;**  
 18 **staff does. You're talking when it makes it to**  
 19 **the Board for review, let's say for a waiver or**  
 20 **something of that nature?**  
 21 Q. Whenever the Board has to consider the question  
 22 of whether an application or a change app  
 23 unreasonably affects the public interest, okay?  
 24 **A. Okay.**  
 25 Q. Is the Board looking to the public interest on a

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1 statewide basis or what you have termed the  
 2 local public interest when they interpret and  
 3 apply the words public interest?  
 4 **A. We -- we would be looking at the local effects**  
 5 **of that application. So I'm not sure that I'm**  
 6 **quite following you, but if the local effects**  
 7 **would affect the public, then that would be the**  
 8 **local public interest. I'm not sure that I'm**  
 9 **worried if the application affects someone, say,**  
 10 **in Leavenworth. We're managed -- we're -- we're**  
 11 **formed for the local management of the resource.**  
 12 **I'm not really concerned maybe, perhaps, what**  
 13 **the public interest is in -- a couple hundred**  
 14 **miles away. I mean, that -- obviously the**  
 15 **application would have no bearing on the public**  
 16 **that's located outside of our Groundwater**  
 17 **Management District.**  
 18 Q. As among -- as among users who are local users,  
 19 or I will say users of the local aquifer supply,  
 20 is it your view that the Board's job is to  
 21 neutrally treat the City of Wichita in the same  
 22 basis as any other applicant when it applies  
 23 rules and regulations or interprets the public  
 24 interest?  
 25 **A. Yes, we're fair to all water users in reviewing**

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1 **applications.**  
 2 Q. So you would not, for example, apply a bunch of  
 3 criteria to a City of Wichita request that you  
 4 would never apply to any other permit  
 5 applications or change requests, correct?  
 6 **A. It would depend on the nature of the City of**  
 7 **Wichita requests, just like it would depend on**  
 8 **any other water right applicant's request. If**  
 9 **the specific needs or conditions are needed,**  
 10 **then I would recommend that, and I do quite**  
 11 **frequently other than just the City of Wichita.**  
 12 Q. Mr. Boese, in reviewing your CV yesterday, I  
 13 didn't see reference to any professional  
 14 licenses. Do you hold any professional licenses  
 15 or certifications?  
 16 **A. I hold a certification in being a McCrometer**  
 17 **water meter technician, certified service**  
 18 **provider.**  
 19 Q. And how is such a certification obtained?  
 20 **A. That was specific training on repair,**  
 21 **installation, and sales of McCrometer water**  
 22 **meters through -- through the McCrometer**  
 23 **company.**  
 24 Q. Okay. So the manufacturer and distributor  
 25 provides that training?

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1 **A. Yes.**  
 2 Q. And are there any other licenses or  
 3 certifications that you hold?  
 4 **A. No.**  
 5 Q. And you mentioned that some of the -- some of  
 6 the review that you had done of MODSIM and  
 7 MODFLOW actually was done by Mr. Flaherty when  
 8 he was at the District. Is Mr. Flaherty a  
 9 licensed geologist?  
 10 **A. He is -- well, I can't speak of what he is today**  
 11 **because he's no longer employed by me. He was**  
 12 **not a licensed geologist; he did hold a master's**  
 13 **degree in geology while he was employed with me.**  
 14 Q. Did he have any other professional licenses?  
 15 **A. Without reviewing his personnel file, which I**  
 16 **don't have access to, I'm not sure that I**  
 17 **could -- I could comment on that.**  
 18 Q. I think you indicated that -- that the degree  
 19 you hold is a bachelor's degree in general  
 20 studies. I don't recall your CV mentioning when  
 21 that degree was obtained. When did you obtain  
 22 that degree?  
 23 **A. 2011. Let me correct that, I'm not entirely**  
 24 **sure if it was 2010 or 2011, so I don't want --**  
 25 **I don't want to misspeak on the record.**

1 Q. So relatively recently, and it would follow that  
2 when you were hired to be District manager, you  
3 actually did not yet have a degree?  
4 **A. That's correct.**  
5 Q. Did you have the certification in meter work  
6 that you had referred to earlier?  
7 **A. I -- I did.**  
8 Q. In your college course work, did you take any  
9 classes on law?  
10 **A. Yes.**  
11 Q. And what were those classes?  
12 **A. I don't remember the title of the class, it was**  
13 **a business law class.**  
14 Q. So there was one general business law class?  
15 **A. From my recollection, yes.**  
16 Q. And do you recall who taught that?  
17 **A. Oh, gosh, no, I do not.**  
18 Q. And can you tell us about the -- about the  
19 subtopics, what the course covered in terms of  
20 law?  
21 **A. Well, you're asking me to remember things that I**  
22 **took years ago. I think there was -- part of**  
23 **that was contracts, how an agent is related to,**  
24 **let's say, in a contract situation. I**  
25 **specifically -- I specifically remember that.**

1 **A. I don't think the original CV had the specifics**  
2 **that I had -- that I would prefer to have in my**  
3 **CV.**  
4 Q. Would you say that -- that you made errors in  
5 preparing your initial CV?  
6 **A. Could you point those out to me?**  
7 Q. In terms of omitting all the content that later  
8 you needed to add in Exhibit 83?  
9 **A. So did you say error or omission?**  
10 Q. Well, I'm asking if you had left all that  
11 content out initially by error?  
12 **A. I left it out by omission. I -- I guess by**  
13 **error, I mean, I just -- it just didn't have the**  
14 **level of detail that my new one has.**  
15 Q. It wasn't because your experience vastly changed  
16 between the time you prepared the two documents,  
17 was it?  
18 **A. No.**  
19 Q. Mr. Boese, a number of other exhibits have been  
20 substituted since the District's notebooks were  
21 originally prepared. Do you know how many  
22 exhibits have been substituted and corrected in  
23 the District's notebooks?  
24 **A. We added some -- some of the drill logs that we**  
25 **had previously talked about, I think we gave**

1 **But it's been quite awhile ago, Mr. McLeod, so I**  
2 **don't remember all the topics.**  
3 Q. Can you tell me, Mr. Boese, who was Casimir  
4 Pulaski?  
5 **A. I -- I'm not aware of that.**  
6 Q. Would you be able to tell me who was Lew  
7 Wallace?  
8 **A. I'm not sure where your line of questioning is**  
9 **going, I believe -- I believe Mr. Wallace had**  
10 **some aspects of hydrology or geology, but the**  
11 **name is not catching me right now.**  
12 Q. How about Don Carlos Buell?  
13 **A. Again, that was a -- some hydrologist or**  
14 **geologist. Science, I believe.**  
15 Q. Would you agree with me, Mr. Boese, that you  
16 really don't know much about generals?  
17 **A. I -- again, I'm not sure where your line of**  
18 **questioning is going but -- but thank you.**  
19 Q. Moving on. Mr. Boese, I noticed that the CV  
20 that you provided that was admitted as  
21 Exhibit 83, it was extensively changed from the  
22 CV initially provided with your expert report,  
23 and is that because you had inadvertently left a  
24 large amount of content out of the initial  
25 version?

1 **those to -- to the counsel in the December**  
2 **hearing, if I remember correct, and we corrected**  
3 **a few water level hydrographs for the index**  
4 **wells. I'm trying to remember if there's**  
5 **anything else off the top of my head.**  
6 Q. Who prepared the originals of those exhibits?  
7 **A. Of the drill logs?**  
8 Q. Right.  
9 **A. The -- the well driller made the drilling log;**  
10 **the City's consultant, which is a licensed**  
11 **geologist, supplemented those with -- with their**  
12 **field notes. Then we made copies out of our**  
13 **files and brought them to you.**  
14 Q. Okay. In terms of compiling them for the  
15 exhibit book, I mean, who -- who was the person  
16 who undertook the task of preparing the actual  
17 exhibit and including it in the notebook?  
18 **MR. STUCKY:** I'm going to object as  
19 to relevance. These questions, I mean,  
20 they're -- they're not relevant at all to  
21 the nature of this hearing.  
22 **PRESIDING OFFICER:** Can you give me  
23 an idea of where you're going with this?  
24 **MR. MCLEOD:** Sure, I can. I mean,  
25 you probably noticed as we were discussing

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1 the proposal, there was hammering and  
 2 hammering and hammering, at least six  
 3 times, I think, Counsel hammered on three  
 4 or four errors that were typos in nature,  
 5 figures and tables. And now we have  
 6 exhibits that have been, you know,  
 7 erroneous in their original iteration and  
 8 corrected by the District, and so questions  
 9 for Mr. Boese, I'd like to know if he was  
 10 involved in those errors, because if errors  
 11 are important, we need to find out if  
 12 Mr. Boese has made errors?  
 13 **PRESIDING OFFICER:** Then you may ask  
 14 that.  
 15 **BY MR. MCLEOD:**  
 16 Q. Mr. Boese, did you make errors in the original  
 17 exhibits that were corrected?  
 18 **A. Can you tell me which exhibits you're referring**  
 19 **to?**  
 20 Q. The ones that were corrected, Mr. Boese?  
 21 **A. The water level hydrographs?**  
 22 Q. Those are among the ones you identified.  
 23 **A. I identified the drill logs which we brought to**  
 24 **you; we haven't got to talking about the**  
 25 **hydrographs, I don't think at this point. But,**

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1 **yes, they were errors that were either made by**  
 2 **my -- myself or my staff in preparing them; they**  
 3 **were minor in detail, although I felt it**  
 4 **necessary to correct those.**  
 5 Q. And when you say yourself or your staff, is it  
 6 because you don't recall whether it was yourself  
 7 or your staff that made those errors?  
 8 **A. It would have been my -- my staff that made**  
 9 **those errors, and I did not catch them when I**  
 10 **reviewed the water level hydrographs.**  
 11 Q. Let's go to Exhibit 4 in the GMD exhibit books.  
 12 Now, Mr. Boese, just for -- just for efficiency,  
 13 I'm going to represent to you that this exhibit  
 14 is the City of Wichita's second interrogatories  
 15 to the District, with the District's answers  
 16 also provided. And if you will turn to page 7,  
 17 numbered page 7 in the exhibit.  
 18 **A. I'm sorry, are you in Exhibit Number 4?**  
 19 Q. Number 4.  
 20 **A. And you said second request?**  
 21 Q. City of Wichita's second interrogatories to  
 22 Equus Beds Groundwater Management District  
 23 No. 2.  
 24 **A. Under Exhibit 4?**  
 25 Q. Under Exhibit 4 in the District's book.

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1 **A. Under Volume I, Exhibit 4, mine says responses**  
 2 **to City of Wichita's first set of**  
 3 **interrogatories to Equus Beds Groundwater**  
 4 **Management District No. 2.**  
 5 Q. Well, that's handy.  
 6 **MR. MCLEOD:** May I approach the  
 7 witness --  
 8 **PRESIDING OFFICER:** Yes.  
 9 **MR. MCLEOD:** -- Madam Hearing  
 10 Officer?  
 11 **A. I know these were taken apart, I think, at some**  
 12 **point in time by the original court reporter, so**  
 13 **I'm not sure which one I'm looking at.**  
 14 **BY MR. MCLEOD:**  
 15 Q. Okay. Sorting that out in the book before the  
 16 witness, that exhibit is actually marked as the  
 17 District's Number 3. Mr. Boese, if you will  
 18 turn to page 7. You'll see the interrogatory  
 19 number 5 there, I believe, asks that if any of  
 20 the documents the District had been asked to  
 21 identify pursuant to the interrogatories or that  
 22 the City had asked to be produced pursuant to  
 23 any of the requests for production were withheld  
 24 under a claim of privilege, or not produced for  
 25 whatever reason, the District was asked to state

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1 with specificity the claim of privilege or other  
 2 reasons to withhold production; identify each  
 3 document by date, author, and subject matter,  
 4 without disclosing its contents, in a manner  
 5 sufficient to allow it to be described to the  
 6 Hearing Officer for ruling on the privilege or  
 7 other reason asserted; and to produce those  
 8 portions of any document not subject to a claim  
 9 of privilege or other reason for non-production  
 10 by excising or otherwise protecting the portions  
 11 for which a privilege is asserted, if such a  
 12 technique does not result in disclosing the  
 13 contents of the portions for which some  
 14 privilege is asserted.  
 15 And if you will look at the response, what  
 16 did the District respond to that interrogatory?  
 17 **A. This interrogatory answer will be addressed at a**  
 18 **later time, through answers to the City's**  
 19 **requests for production of documents, with a**  
 20 **privilege log and any supplemental response.**  
 21 Q. In fact, Mr. Boese, was that privilege log ever  
 22 provided to the City?  
 23 **A. I don't recall.**  
 24 Q. If I were to tell you that, in fact, the  
 25 District never provided that privilege log to

1 the City, would you disagree with me?  
2 **A. I -- I don't recall, Mr. McLeod. So I can't**  
3 **agree or disagree with you.**  
4 Q. You would agree with me, Mr. Boese, that on  
5 page 14 of that exhibit -- excuse me, on page 16  
6 of that exhibit, you're the person who signed  
7 those interrogatory responses under oath,  
8 correct?  
9 **A. That is correct.**  
10 Q. And yet you're telling us today that you don't  
11 know if the answer to number 5 is true because  
12 you don't know if the privilege log was ever  
13 provided?  
14 **A. Could you repeat that question or rephrase that,**  
15 **I didn't quite follow?**  
16 Q. Let's break it down. Mr. Boese, on page 16, you  
17 did sign the answers to these interrogatories  
18 under oath, did you not?  
19 **A. Yes.**  
20 Q. And as we were looking at the response to  
21 interrogatory 5, it said that a privilege log  
22 would be produced, and I recall you testified  
23 that you don't know whether that ever actually  
24 happened or not. So I'm asking you now, are you  
25 telling us in the hearing that you signed under

1 compel. And as you know, the District  
2 filed motions to compel, and, in fact, as a  
3 result of the motions to compel we filed,  
4 you ordered that the City furnish us a  
5 number of additional documents and to  
6 properly answer some of our requests for  
7 admissions and interrogatories, I believe.  
8 And so there was -- there was an  
9 opportunity for the City to take corrective  
10 measures based on what we complained about.  
11 And as you know, the protocol with respect  
12 to motion hearings is to file a motion to  
13 compel -- or, actually, back up, there's  
14 another step, you have to first send a  
15 golden rule letter, give the other party an  
16 opportunity to respond, then you file a  
17 motion to compel. If the information still  
18 is not furnished, then of course it comes  
19 before a hearing, but to try and bootstrap  
20 some sort of motion to compel argument into  
21 this hearing is just not relevant and also  
22 not timely.  
23 **MR. MCLEOD:** Counsel's entire  
24 statement is entirely irrelevant. The  
25 objective here is to ascertain error and

1 oath these responses but you don't know whether  
2 the answer to interrogatory number 5 is true?  
3 **A. Yeah, I don't know if it was provided or not. I**  
4 **just flat don't recall.**  
5 Q. So you also wouldn't be able to speak to whether  
6 your signature under oath to that response was  
7 in error?  
8 **MR. STUCKY:** I'm going to object to  
9 this, it's mischaracterizing the nature of  
10 this question. This question says that  
11 sometime in the -- this interrogatory  
12 answer suggests that sometime in the future  
13 a privilege log might be provided. When he  
14 signed the interrogatories, he would have  
15 no knowledge if this future event would  
16 have occurred or not, so to try and  
17 bootstrap in some admission that when he  
18 signed this he would have had knowledge of  
19 whether or not it would be furnished is  
20 misstating the testimony.  
21 Furthermore, I guess I'm just objecting  
22 as to relevance. As you know very well, we  
23 had a motion hearing -- we had a motion  
24 deadline, we had a motion hearing, and  
25 there was opportunities to file motions to

1 credibility issues, the witness has signed  
2 a statement under oath, the witness has  
3 indicated that he doesn't know if this  
4 statement was true.  
5 Now, as far as it being a  
6 forward-looking statement, of course, we  
7 all know that there is a duty to supplement  
8 responses to interrogatories that lasts  
9 until the date of hearing. And, therefore,  
10 I would like to ask the witness one  
11 additional question in this line, whether  
12 this response was ever supplemented by him?  
13 **PRESIDING OFFICER:** Well, as I read  
14 this, the answers to these questions, the  
15 signature that Mr. Boese provided verified  
16 that the answers were true and correct to  
17 the best of his information, knowledge, and  
18 belief, and that was on February 4 of 2019,  
19 so at that point in time he signed that  
20 these were, to the best of his knowledge,  
21 correct answers. If something that was  
22 stated was intended to happen in the future  
23 did or didn't happen, that's a different  
24 matter than what he was signing to at the  
25 time. So he -- it's appropriate to ask if

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1 those items were ever provided, but it is  
 2 not appropriate to imply that what he  
 3 signed at that time was not true if that  
 4 didn't end up happening. If you understand  
 5 my distinction.  
 6 **MR. MCLEOD:** And hence why I would  
 7 ask the further question whether the answer  
 8 was ever supplemented, because at some  
 9 point, certainly, the District knew that it  
 10 did not and was not going to provide the  
 11 privilege log.  
 12 **MR. STUCKY:** And I say objection,  
 13 asked and answered, he didn't recall.  
 14 **PRESIDING OFFICER:** I believe he has  
 15 said he does not recall, so, yes, I'm going  
 16 to sustain these objections, including the  
 17 implication that this was an answer that  
 18 was not true.  
 19 **MR. MCLEOD:** I'll move on.  
 20 **BY MR. MCLEOD:**  
 21 Q. Mr. Boese, in your CV, where are lithographic  
 22 logs mentioned?  
 23 **A. They are not. However, I would note that I did**  
 24 **state that I witnessed and inspected**  
 25 **construction of monitoring wells, which would**

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1 **include reviewing and making lithologic logs**  
 2 **from those drill cuttings. I didn't**  
 3 **specifically note that; I think that would be**  
 4 **pretty hard to note every single piece of**  
 5 **document that I've ever reviewed on a CV.**  
 6 Q. This was during your service as hydrologic  
 7 technician for the District?  
 8 **A. And as hydrologist and as manager, I've been out**  
 9 **on -- I've reviewed lithologic logs and been out**  
 10 **on drill sites since I started with the**  
 11 **District.**  
 12 Q. In the CV that referenced to witnessing and  
 13 inspecting well construction, it is with the  
 14 duties described for the hydrologic technician,  
 15 correct?  
 16 **A. Yes, but if you notice under hydrologist and**  
 17 **interim manager, the first bullet point says,**  
 18 **performed most duties listed above under**  
 19 **hydrologic technician. And, again, under**  
 20 **manager, it says, as needed, performed many of**  
 21 **the duties listed under hydrologic technician.**  
 22 Q. When you say you witnessed and inspected the  
 23 construction of these wells, what did that  
 24 entail?  
 25 **A. Well, I'll use our monitoring well installation**

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1 **as a -- as an example. We have a specification**  
 2 **on how a District monitoring well would be**  
 3 **drilled and constructed. So when we are adding**  
 4 **a new monitoring well or replacing an old one,**  
 5 **we will provide a staff member at the drill site**  
 6 **to ensure that the well is properly drilled to**  
 7 **the correct depth, casing is set properly,**  
 8 **screen is set properly, gravel pack is set**  
 9 **properly, grout is set properly, the well is**  
 10 **then developed properly, and during that time,**  
 11 **we would also log the hole as it is being**  
 12 **drilled by sampling drill cuttings and noting**  
 13 **what material was at depth.**  
 14 Q. Okay. How many wells did you oversee  
 15 construction of in that fashion?  
 16 **A. I don't have a count, Mr. McLeod, I would say**  
 17 **dozens. And I also did not mention cathodic**  
 18 **protection bore holes is another example where**  
 19 **we have a permitting process where an applicant**  
 20 **has to actually apply through our District**  
 21 **rather than the Kansas Corporation Commission**  
 22 **for cathodic protection bore holes; and I can go**  
 23 **into great detail, if you like, on what those**  
 24 **are, but, again, that is a similar sort of**  
 25 **processing, ensuring that surface casing is**

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1 **properly set, logging the hole, properly grouted**  
 2 **to protect the aquifer.**  
 3 Q. Okay.  
 4 **A. And that would, again, be dozens that I've been**  
 5 **out on those also.**  
 6 Q. Do you again take lithographic samples for those  
 7 bore holes?  
 8 **A. Generally, yes, along with the driller, we -- we**  
 9 **coordinate with the driller, which is what most**  
 10 **inspectors would do is to coordinate with the**  
 11 **driller to take samples of drill cuttings on the**  
 12 **way down.**  
 13 Q. You had indicated at one point in your testimony  
 14 that at one point in time you were a certified  
 15 lab for KDHE as to some water quality and  
 16 laboratory analysis issues and that that's no  
 17 longer the case. Why is it no longer the case?  
 18 **A. That became very time consuming and cost**  
 19 **prohibitive for the District, with a -- with a**  
 20 **staff of four people and a small budget, to**  
 21 **maintain certification through KDHE. It was**  
 22 **quite a fair amount of work and use of**  
 23 **resources, both money and time, to maintain that**  
 24 **inspection -- or that certification.**  
 25 Q. You had mentioned with respect to your initial



1 service as interim manager that Mike Dealy had  
2 resigned and Lee Wheeler was there for a while  
3 but also resigned. What occasioned the  
4 resignations of Mr. Dealy and Mr. Wheeler?  
5 **A. You want me to speak to why they resigned?**  
6 Q. Yes.  
7 **A. I -- I don't know that I would feel comfortable**  
8 **discussing staff personnel. I -- I don't know**  
9 **that I can get into their minds of why they --**  
10 **why they resigned. That may be difficult for me**  
11 **to do.**  
12 Q. You don't know if there were stated reasons?  
13 **A. As far as written stated reasons?**  
14 Q. Yes.  
15 **A. I -- I do not recall. I was -- I was at the**  
16 **board meeting when Mr. Dealy resigned, and I**  
17 **don't believe he submitted any sort of written**  
18 **documentation. He may have, but I was probably**  
19 **not privy to it. And I do not recall if**  
20 **Mr. Wheeler had any written documentation on his**  
21 **resignation. He also resigned at a board**  
22 **meeting, but I don't know that there's any**  
23 **documentation specific to their reasons why they**  
24 **resigned.**  
25 Q. Mr. Boese, you indicated in your -- in your

1 Q. For how many of those hundreds of permit  
2 applications that you reviewed did you do a  
3 minimum desirable streamflow analysis?  
4 **A. None that I can be aware of.**  
5 Q. For how many of those permit applications that  
6 you reviewed did you do any chloride migration  
7 analysis to determine what impact they might  
8 have on chloride migration?  
9 **A. Many. Because if they're located in the two**  
10 **special groundwater areas, which would be the**  
11 **Burrton Intensive Groundwater Use Control Area**  
12 **or what we call the Hollow-Nikkel Special Water**  
13 **Quality Use Area, that is a requirement of their**  
14 **application process is to look at their impacts**  
15 **to chloride migration. So it would be dozens of**  
16 **those.**  
17 Q. And outside those special areas, have there been  
18 any?  
19 **A. Specifically related to chloride movement or any**  
20 **other contamination movement?**  
21 Q. To chloride movement?  
22 **A. I believe we have looked at some that have been**  
23 **near the Arkansas River and some that are near**  
24 **the -- some of the other oil field brine**  
25 **contaminated areas, we have looked at their**

1 testimony that you had -- had reviewed thousands  
2 of applications for permits in the aquifer, and  
3 you also indicated that this aquifer has been  
4 over-appropriated for a long time. How would  
5 there be thousands of applications in an aquifer  
6 that's been so over-appropriated for such a long  
7 time?  
8 **A. I believe I said hundreds and it could be a**  
9 **thousand or more applications, and I was**  
10 **referring both to new applications and change**  
11 **applications.**  
12 Q. So if you said thousands, you would want to  
13 correct that to hundreds at this point?  
14 **A. I -- again, I believe I said hundreds and it**  
15 **could be a thousand or more, but I would -- that**  
16 **would be my testimony today, it's been hundreds**  
17 **and very well could be over a thousand. And,**  
18 **again, a lot of those would have been change**  
19 **applications and a lot would have been new. And**  
20 **just so we're clear, the entire aquifer is not**  
21 **over-appropriated. I've been referring to the**  
22 **City of Wichita's well field area being**  
23 **over-appropriated. There are new permits still**  
24 **being applied for and approved throughout the**  
25 **District.**

1 **proximity to those chloride contamination**  
2 **plumes.**  
3 Q. Mr. Boese, if I understood correctly, you  
4 indicated in your main testimony that on  
5 occasions, even when you were hydrologist, you  
6 would sometimes assist applicants with their  
7 permit applications. Was I understanding that  
8 correctly?  
9 **A. That is something we do on a -- on a regular**  
10 **basis, we assist applicants with filing the**  
11 **proper paperwork with the Division of Water**  
12 **Resources for a change or a new application.**  
13 Q. And in this case, I'm sure you're aware it's  
14 been the District's position to be critical of  
15 DWR because its staff were communicating with  
16 the City on this proposal. Can you explain for  
17 me why it's okay for District staff to do that  
18 with permit applicants but it's not okay for  
19 DWR?  
20 **A. I think there's absolutely nothing wrong with**  
21 **the Division of Water Resources or the**  
22 **Groundwater Management District assisting an**  
23 **applicant by completing paperwork for a change**  
24 **or a new application. I'm not sure -- I'm not**  
25 **sure where you're going with we were critical of**

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1 **DWR -- DWR was helping the City of Wichita file**  
 2 **an application by helping them write down what**  
 3 **the City was requesting, which is generally what**  
 4 **we do with an application is, let's say, a city**  
 5 **comes in and wants to file an application, I'll**  
 6 **ask them the information that they would like to**  
 7 **place on the application, I will assist them in**  
 8 **doing that, much like I would an irrigator. I'm**  
 9 **not advocating for the approval of that**  
 10 **application or the denial. I am assisting them**  
 11 **in filing the proper paperwork.**  
 12 Q. And if there's additional information that you  
 13 think is needed for the evaluation, do you -- do  
 14 you ask them for that information or help them  
 15 to develop it?  
 16 **A. When they're filing the application or when I'm**  
 17 **reviewing the application?**  
 18 Q. When you're reviewing the application?  
 19 **A. If there's information that is -- that is**  
 20 **lacking, then I would request that information**  
 21 **from the applicant.**  
 22 Q. Now, Mr. Boese, as Counsel was going through  
 23 with you the frequency with which the Board  
 24 defers to staff recommendations and DWR defers  
 25 to the District Board recommendations, I think

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1 you had indicated that you couldn't recall an  
 2 instance in which DWR didn't defer to the  
 3 District on the issue of what is or is not  
 4 exempt from safe yield. Just to clarify, DWR  
 5 did not defer to the District's position in this  
 6 case, did they?  
 7 **A. I don't know that we've had that direct**  
 8 **conversation where I have written a letter of**  
 9 **denial for -- because we don't have an**  
 10 **application in front of us, so I don't think**  
 11 **I've written a letter of denial based on safe**  
 12 **yield, and I don't think that DWR has issued a**  
 13 **letter in response to that that they disagree**  
 14 **with me, if that's what you're saying.**  
 15 Q. So would you agree with me that the District has  
 16 made pretty clear in this case that it posits  
 17 that AMCs should be subject to safe yield, and  
 18 would you agree that DWR doesn't agree with that  
 19 conclusion?  
 20 **A. I would agree with that.**  
 21 Q. Mr. Boese, you talked about a number of  
 22 presentations you had given to different groups,  
 23 and I was curious, have you heard of the Kansas  
 24 Rural Water Association?  
 25 **A. I have.**

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1 Q. Are you familiar with the annual attorney  
 2 roundtable that that group sponsors?  
 3 **A. I am not familiar with that.**  
 4 Q. So that would not be a group that you have been  
 5 asked to address over the years on water rights  
 6 issues?  
 7 **A. I have not been asked by that group to address**  
 8 **them, no. I'd be happy to if they invite me.**  
 9 Q. Mr. Boese, as we were looking at the letter that  
 10 was accepted as a letter signed by Cristi Hansen  
 11 thanking you for comments from a review that you  
 12 had done, I think that was admitted as  
 13 Exhibit 62, the review that you conducted in  
 14 that instance and your comments, were those  
 15 directed to her modeling results, or did you  
 16 also review and comment on her programming and  
 17 inputs?  
 18 **A. I'm going to have to review the -- review the**  
 19 **letter. Can you tell me what exhibit it is?**  
 20 Q. The letter is Exhibit 62.  
 21 **A. Can you repeat what you -- your question?**  
 22 Q. So the review and comments that she's thanking  
 23 you for --  
 24 **A. Uh-huh.**  
 25 Q. -- were your -- were your comments on her report

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1 limited to her model results, or did you also  
 2 review and comment on her programming and  
 3 inputs?  
 4 **A. It appears modeled results, I didn't have the**  
 5 **model to -- to look at the exact what all the**  
 6 **inputs were. This is review of the texts, it**  
 7 **would have been review of her outputs.**  
 8 Q. Looking to Exhibit 63 in the District's book,  
 9 which was the letter from Mayor Carl Brewer  
 10 inviting you to serve on a committee.  
 11 Mr. Boese, was this a letter uniquely sent to  
 12 you, or was this a form letter that was  
 13 basically sent to all committee members?  
 14 **A. I have no idea.**  
 15 Q. Mr. Boese, have you ever helped an applicant in  
 16 more involved terms than simply filling out an  
 17 application as, for example, helping an  
 18 applicant to find a location for their point of  
 19 diversion that would meet safe yield or spacing  
 20 requirements?  
 21 **A. Yes.**  
 22 Q. Mr. Boese, in terms of your service on the  
 23 Executive Oversight Committee, which you  
 24 mentioned in your direct testimony, do you know  
 25 if the request to serve on that committee has

1 been a request commonly extended to prior  
2 managers of the District?  
3 **A. I am unaware. I don't know that there was a ASR**  
4 **Oversight -- Executive Oversight Committee that**  
5 **was available for other managers to serve on, I**  
6 **don't know. I can only speak to what I was**  
7 **asked to serve on.**  
8 Q. As we were looking at Exhibit 44 during your  
9 main testimony, Counsel had asked you about  
10 acknowledgments, and I think you were having  
11 trouble in that exhibit finding acknowledgments.  
12 If we look at the table of contents, indeed,  
13 there is not a reference to acknowledgments in  
14 that document, is there, Mr. Boese?  
15 **A. You're going to have to give me one minute,**  
16 **these exhibit notebooks have been used so much**  
17 **that they're beginning to not stay together very**  
18 **well. I don't see an acknowledgment in this**  
19 **particular copy of this -- this report.**  
20 Q. But if we go back to numbered page 72,  
21 Mr. Boese, there is a long section that spans  
22 the next few pages entitled References Cited,  
23 isn't there?  
24 **A. Yes, there is.**  
25 Q. And looking through the references cited in that

1 the nights that Counsel mentioned you had spent  
2 preparing for your testimony?  
3 **A. That would be my rate if I was asked by someone**  
4 **other than the Groundwater Management District**  
5 **to testify as an expert. I am receiving my**  
6 **normal salary for this job.**  
7 Q. Okay. So you're not actually charging the  
8 District that rate of \$175 an hour for this  
9 case?  
10 **A. Unfortunately, no.**  
11 Q. Mr. Boese, what is your normal salary?  
12 **A. Are you asking me a personnel question?**  
13 Q. I'm asking you a question that goes to the  
14 independence of the witness and is a matter of  
15 public record because it's a public salary?  
16 **A. It's a little over \$90,000 a year.**  
17 Q. In addition, Mr. Boese, do you get participation  
18 in the state pension system?  
19 **A. Yes, I do.**  
20 Q. And does the District contribute to that?  
21 **A. They're required to as part of the KPERs does**  
22 **require it, the employee and the employer**  
23 **contribution.**  
24 Q. Do you receive any other perks such as use of  
25 District vehicles or District cell phones or

1 USGS report, can you find a reference that  
2 refers to you or the -- or GMD2?  
3 **A. I do -- I do not see one, although I see**  
4 **references to other -- other people who did**  
5 **other work and they reference reports that we**  
6 **would have assisted in, but I don't see a direct**  
7 **reference to the Groundwater Management**  
8 **District.**  
9 Q. So whatever you may have done or the District  
10 may have done with respect to working with USGS  
11 on this particular report, it wasn't significant  
12 enough to get any direct mention in the  
13 references, was it?  
14 **A. All I can speak to is it's not listed in the**  
15 **reference. I would -- I would note we are**  
16 **mentioned more than at least -- at least once or**  
17 **more in the report, particularly on page 6 where**  
18 **it says the data that was used for the input**  
19 **came from GMD2 in part.**  
20 Q. Mr. Boese, in your expert report, you indicate  
21 that you're being paid by the District at a rate  
22 of \$175 per hour for expert testimony. Is that  
23 just for the testimony that you give on the  
24 stand, or are you also charging that rate for  
25 assistance to Counsel during the hearing and for

1 District data processing equipment?  
2 **A. I receive a cell phone allowance. And for full**  
3 **disclosure, I drive the District, one of the**  
4 **District vehicles home and back to work so it**  
5 **doesn't sit out -- outside at the office, which**  
6 **is a total of, I think, about six blocks. That**  
7 **way it can be parked inside at my house.**  
8 Q. Mr. Boese, you've worked at the District, I  
9 believe you said in your direct testimony, since  
10 1992?  
11 **A. That's correct.**  
12 Q. And during that time, I think you indicated  
13 that many other staff members, in fact, everyone  
14 who was there when you started has moved on to  
15 other employment?  
16 **A. That's true.**  
17 Q. And others have come and gone during your long  
18 tenure as well?  
19 **A. That would be also true.**  
20 Q. Mr. Boese, have you stayed at the District all  
21 of these years because of a particular affection  
22 and devotion to the job that you hold or because  
23 you didn't -- didn't find prospects elsewhere?  
24 **A. It would be the first that you said, I -- I am**  
25 **dedicated to the position and managing the**

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1 **resources for the folks here in south central**  
 2 **Kansas.**  
 3 Q. And because of that, it's important to you  
 4 personally to retain your position as manager of  
 5 the District, isn't it, Mr. Boese?  
 6 **A. Yes, I enjoy my -- my job.**  
 7 Q. In consequence of which, you really can't afford  
 8 to get crosswise with the board majority on any  
 9 issue, can you?  
 10 **A. I -- I advise the Board based on my knowledge**  
 11 **and information that I have available. I**  
 12 **don't -- I don't try to appease the Board to**  
 13 **keep my job, if that's what you're saying.**  
 14 Q. Mr. Boese, in the years since you've been  
 15 District manager, have there been any occasions  
 16 where you had to take a position that was  
 17 unpopular with the board majority?  
 18 **A. Can you rephrase that, have I had a position**  
 19 **that was unpopular with the board majority?**  
 20 Q. Just in -- just in the years since you have been  
 21 the District manager --  
 22 **A. Okay.**  
 23 Q. -- have there been any occasions when you had to  
 24 take a position before the Board that was  
 25 contrary to the views of the board majority?

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1 **A. Yes.**  
 2 Q. And how many of those occasions?  
 3 **A. I -- I don't know that I can count them off the**  
 4 **top of my head, but there has been times when I**  
 5 **have felt differently than the majority of the**  
 6 **Board and have made recommendation as such and**  
 7 **that the Board did not necessarily agree with,**  
 8 **whether that was administrative, budget wise, or**  
 9 **something else.**  
 10 Q. Mr. Boese, you had mentioned during your main  
 11 testimony the District's management program,  
 12 which the version introduced was, I believe it  
 13 was Exhibit 71, was dated May 1st of 1995, and  
 14 you clarified in your main testimony that that  
 15 is, indeed, the current document that represents  
 16 the management program of the District; is that  
 17 correct?  
 18 **A. That's correct.**  
 19 Q. Mr. Boese, is there a statute that bears upon  
 20 periodic review and revision of that management  
 21 program?  
 22 **A. An annual review. It's not required to be**  
 23 **revised every year, there's an annual review,**  
 24 **and then the Board can either affirm, keep it as**  
 25 **is, or propose that modifications be made.**

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1 Q. And every year since 1995, has the Board  
 2 reviewed and affirmed the existing plan?  
 3 **A. They've either affirmed or recently they have**  
 4 **proposed for modifications to be made which are**  
 5 **in the process.**  
 6 Q. When you say recently, when did they propose the  
 7 modifications?  
 8 **A. It's -- they have not actually proposed the**  
 9 **modifications; they proposed that the management**  
 10 **program be updated, which is -- staff has been**  
 11 **working on not nearly enough due to other issues**  
 12 **such as this, but it is our goal to update our**  
 13 **management program shortly.**  
 14 Q. Because the existing iteration of the management  
 15 program hasn't been updated since 1995, it's  
 16 essentially all pre-ASR, isn't it?  
 17 **A. As far as any actual permits for ASR, yes. The**  
 18 **ASR was being discussed when it was -- when it**  
 19 **was last updated.**  
 20 Q. Do you think there's anything in the existing  
 21 management program that directly pertains to  
 22 ASR?  
 23 **A. Well, certainly, the goals of the District and**  
 24 **the guiding principles and the -- and the**  
 25 **policies that are stated in there pertain to all**

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1 **water right -- all water rights in the District.**  
 2 **So specifically is the word ASR in the**  
 3 **management program, no, but the goals of the**  
 4 **District have not changed due to ASR.**  
 5 Q. As you read through some of the powers and  
 6 duties of the District in your main testimony,  
 7 one of those referenced the protection of water  
 8 quality and remediation of contamination. Do  
 9 you know, Mr. Boese, what has the District done  
 10 to remediate contamination?  
 11 **A. I'm sorry, you said that was under our powers**  
 12 **and duties; I think that's actually under one of**  
 13 **our -- one of our goals.**  
 14 Q. Thank you, yes, under one of your goals?  
 15 **A. What have they done to remediate?**  
 16 Q. To remediate contamination?  
 17 **A. Well, we've installed a monitoring well network**  
 18 **consisting of over 500 monitoring wells to track**  
 19 **chloride contamination and other contaminants.**  
 20 **As far as remediation project, we do not have**  
 21 **one.**  
 22 Q. Okay. So basically the District is tracking  
 23 chloride migration?  
 24 **A. Tracking, we're also cooperating with other**  
 25 **state and federal agencies on -- on possible**

1 remediation efforts.

2 Q. Mr. Boese, in terms of just clarifying your  
3 involvement with some ASR Phase I and Phase II  
4 issues, as far as the proposed permit conditions  
5 that came out of the District, wasn't it Mike  
6 Dealy who wrote the ASR Phase I and II permit  
7 conditions recommended by the Board?

8 **A. Not the Phase II, I wrote the Phase II. Phase**  
9 **I, I can't say that -- that Mr. Dealy did them**  
10 **by himself, we had other staff members, so I**  
11 **think that was -- I guess I'm a little confused,**  
12 **there would have been recommendations to our**  
13 **Board, and then the Board would have forwarded**  
14 **those on. So you say written in the -- they're**  
15 **actually in the permit? I mean, we wouldn't**  
16 **have typed -- typed in those conditions into the**  
17 **permit. We would have made recommendations to**  
18 **the Division of Water Resources.**

19 Q. In terms of the recommendations to the Board,  
20 when staff was giving the Board potential permit  
21 conditions to suggest to DWR, did Mr. Dealy  
22 write those for ASR Phase I?

23 **A. I'm sure he was involved in writing those. I**  
24 **would imagine other staff members were also**  
25 **assisting in that.**

1 Q. Were you one of those staff members, did you  
2 have any role in writing those recommended  
3 permit conditions?

4 **A. I certainly reviewed those at the time. Did I**  
5 **actually write them? I think collaboratively as**  
6 **a District staff, we all looked at those and**  
7 **made suggestions to Mr. Dealy to present to the**  
8 **Board; and I think Mr. Koci, who I don't believe**  
9 **is here today, was also involved with that.**

10 Q. And with respect to the -- to the memorandum of  
11 understanding, first the Phase I memorandum of  
12 understanding, what was your personal role with  
13 respect to the preparation of that Phase I MOU?

14 **A. That would have been mostly a review process**  
15 **when I was reviewing the language in that, along**  
16 **with the other staff members.**

17 Q. So you wouldn't have been actually the  
18 originator of the language in the MOU?

19 **A. For Phase I?**

20 Q. For Phase I?

21 **A. No.**

22 Q. And how about Phase II, Mr. Boese, would that be  
23 different, would you have had a greater role  
24 with the Phase II MOU?

25 **A. I believe so. I think that was also obviously**

1 **our District attorney and the City attorney, I**  
2 **think, were the main -- main authors of that.**

3 Q. Mr. Boese, as you were interpreting language  
4 from the Phase I permit and you noted that in  
5 your view the chief engineer issuing the permit  
6 at that time had defined passive recharge credit  
7 with a referenced i.e., water which the City  
8 could have legally pumped but did not pump, my  
9 question for you is could a later chief engineer  
10 have his or her own concept of a passive  
11 recharge credit that's different than that?

12 **A. Yes, but there's a precedent set with that**  
13 **original order, so I think they'd have to**  
14 **explain why that would be different.**

15 Q. Is the chief engineer who serves at any given  
16 time bound by the opinions of all prior chief  
17 engineers that have served with the Division of  
18 Water Resources?

19 **A. I don't know the answer to that.**

20 Q. In your main testimony, Mr. Boese, Counsel asked  
21 you if there was significance in the protection  
22 provided by the 1993 lower index levels, and you  
23 said there was significance in that protection.  
24 What is that significance, what significant  
25 protection is provided by the 1993 lower index

1 levels?

2 **A. That was to ensure that the water levels did not**  
3 **decline any further due to the City pumping**  
4 **recharge credits below 1993 levels, and then**  
5 **that would also protect the senior water right**  
6 **holders that already have that water dedicated**  
7 **to their use below that 1993 level.**

8 Q. Mr. Boese, you were present at the District when  
9 those 1993 levels were first determined,  
10 correct?

11 **A. Yes.**

12 Q. What was your role in the determination of those  
13 lower index levels?

14 **A. Just so we're clear, are we talking about the**  
15 **original order or the corrected numbers?**

16 Q. If there's a difference, please answer it both  
17 ways.

18 **A. I think my role was probably limited when they**  
19 **were first established because that was just not**  
20 **part of my job duty at that time. The corrected**  
21 **values, that was done largely with my staff,**  
22 **myself, I believe USGS was involved and the City**  
23 **of Wichita reviewed those. We found some**  
24 **discrepancies in what was issued as the 1993**  
25 **levels as to what we believed they should be,**

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1 and that was a collaborative effort between,  
 2 again, multiple people and multiple -- multiple  
 3 agencies to correct those, so I was involved in  
 4 that, reviewing those.  
 5 Q. When the index levels were originally set,  
 6 describe the process, the process by which that  
 7 work was done.  
 8 A. Well, again, I think I just stated when the  
 9 original ones, I was -- that was not my role at  
 10 the District during that time, but if memory  
 11 serves me right, that was based on some USGS  
 12 data, interpolation of data that they had to  
 13 come up with a minimum index level at those  
 14 index well locations.  
 15 Q. So they -- they were looking at specific well  
 16 points, and they were applying in some way data  
 17 from a USGS document?  
 18 A. Again, I -- I don't feel real comfortable  
 19 because I don't know exactly what the role --  
 20 what the process was. That was my recollection  
 21 that that was based on some USGS data that  
 22 looked at available water level information. It  
 23 was also looking at predevelopment, which was  
 24 obviously more difficult because there's not  
 25 near as many data points for predevelopment, to

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1 set the upper. The lower was based on the data  
 2 that was available when those were established.  
 3 Q. Do you recall when Mr. Clement was testifying,  
 4 he mentioned that there had been some use of  
 5 hand drawn contours, can you give us any detail  
 6 on that?  
 7 A. In relationship to?  
 8 Q. To the setting of the original '93 levels, do  
 9 you know what -- what role hand drawn contours  
 10 would have played in that process?  
 11 A. I assume that was taking the available data and  
 12 drawing in contours by hand to determine what  
 13 the ele -- the water level elevation would have  
 14 been in 1993 at specific index well locations.  
 15 Q. And just to explain that better for the record,  
 16 I mean, what is that, what is the significance  
 17 of the hand drawn contours, what do they  
 18 signify?  
 19 A. As compared to?  
 20 Q. I mean, somebody's drawing contours on a map --  
 21 A. Uh-huh.  
 22 Q. -- what do they signify? What does the contour  
 23 mean, what is its purpose on the map, what's it  
 24 showing?  
 25 A. Well, along that line of contour, the water

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1 levels would all be the same, so you generally  
 2 would do it by hand rather than having, let's  
 3 say, a computer program do it because you can  
 4 generally be more -- more precise and accurate  
 5 with the hand contour to connect the data points  
 6 that you have. If you allow a computer program  
 7 to do it, it -- it may be -- there may be some  
 8 issues with that, so you -- if you can, you may  
 9 do it by hand to further -- further refine that  
 10 data.  
 11 Q. How much additional precision do you get with  
 12 hand drawn contour versus computer, or does it  
 13 matter depending on the area you're modeling?  
 14 A. I think it's certainly a matter on the data set  
 15 that you have.  
 16 Q. Mr. Boese, do you know, was -- in general, were  
 17 the 1993 levels set based on lowest levels that  
 18 had been recorded rather than actual water  
 19 volumes available in storage?  
 20 A. I'm not sure I understand the difference. It  
 21 would have been based on the available data that  
 22 we had and that the USGS had, I believe, or --  
 23 it would have been the water level. I'm not  
 24 sure where you're going with the storage. Those  
 25 two are interrelated, so I'm not sure where that

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1 question's going.  
 2 Q. So, I mean, basically they selected the water  
 3 levels that were the lowest water levels of  
 4 record at that point in time?  
 5 A. The lowest water levels of record at that time,  
 6 well, that would have been -- at that time, it  
 7 would have been the water level, and I don't  
 8 know -- I'm not quite following the lowest at  
 9 that time; it just would have been the water  
 10 level at that time.  
 11 Q. Yeah, let me -- let me clarify that badly  
 12 phrased question. At the time they were  
 13 selecting water levels, they chose the lowest  
 14 water levels that were of record as of the time  
 15 they were selecting water levels, correct?  
 16 A. I'm not sure that clarified it, but the process  
 17 that I can remember, Mr. McLeod, is we keep  
 18 calling them the '93, which is a little bit of,  
 19 probably a misstatement because a lot of those  
 20 were October, I believe, of '92, some of them  
 21 were January of '90 -- '93, they selected the  
 22 water levels that were recorded at that time to  
 23 establish those 1993 levels.  
 24 Q. And were those, as far as folks knew, the lowest  
 25 water levels that had ever been recorded in the

1 aquifer?  
2 **A. In the Wichita well field area?**  
3 Q. Yes.  
4 **A. I believe they were.**  
5 Q. And -- and was that fact that they were the  
6 lowest levels folks knew of in the history of  
7 the well field area the basis for selecting  
8 them?  
9 **A. Yeah, the -- I mean, the regulation for ASR**  
10 **permitting before it was changed recently said**  
11 **that it was the lowest water level within ten**  
12 **years of filing an ASR permit application, so**  
13 **that would have fit into what was the lowest**  
14 **within that ten-year period. So let me maybe**  
15 **correct that, I can't say that those '93 levels**  
16 **were the lowest ever recorded, but for the**  
17 **purpose of ASR permitting, those would have been**  
18 **the lowest that were recorded within ten years**  
19 **of filing that application. I can't say what**  
20 **the water levels were, say, in 1975, if they**  
21 **were lower or something like that.**  
22 Q. Mr. Boese, looking to Board Exhibit 31, a letter  
23 of April 27, 2018 that was sent to the chief  
24 engineer over your signature.  
25 **A. Can you tell me which exhibit notebook that's**

1 **City was proposing with the AMCs, but shortly**  
2 **thereafter, yes, I would have been concerned**  
3 **about if they were passive recharge credits or**  
4 **not.**  
5 Q. Would it have been your view from roughly the  
6 time that AMCs were first proposed that they  
7 would be subject, in the District's view, to  
8 safe yield?  
9 **A. Again, as the concept was originally submitted**  
10 **or proposed from the City or the City's**  
11 **consultants, it took me some time to understand**  
12 **exactly what -- what AMCs were or were proposed**  
13 **to be, so I don't know at what point in time I**  
14 **started thinking about safe yield, but sometime**  
15 **thereafter. If you're looking for a date, I**  
16 **don't know.**  
17 Q. Mr. Boese, to the extent that it is, and let  
18 me -- let me just back up. It is the District's  
19 position that AMCs are subject to safe yield,  
20 correct?  
21 **A. Well, first of all, we don't think there is any**  
22 **such thing as AMCs, but if they were, we believe**  
23 **that is groundwater pumping that would be**  
24 **subject to safe yield.**  
25 Q. And it's also the District's view that their

1 **in, Mr. McLeod?**  
2 Q. 31 in the District's book.  
3 **A. Can you tell me which -- Number II, I think?**  
4 Q. Volume II, correct.  
5 **A. Thank you. Okay.**  
6 Q. And specifically with respect to the attachment  
7 C, which expressed some legal concerns, my -- my  
8 question is when did you -- when did you first  
9 formulate those legal concerns?  
10 **A. Are you looking as far as a specific date?**  
11 Q. If you know.  
12 **A. I -- I don't. Sometime prior to April 27 of**  
13 **2018. I mean, I'd had some -- some legal**  
14 **questions since the AMC concept was -- was**  
15 **submitted to me from the City's consultants back**  
16 **in 2017. I don't know when I actually**  
17 **formulated every one of these. I've had those**  
18 **questions since the original concept was -- was**  
19 **proposed from Burns & McDonnell.**  
20 Q. Was the passive recharge credit concern one of  
21 the concerns that you had from the time it was  
22 first proposed?  
23 **A. I don't know when I -- when I started thinking**  
24 **about passive recharge credits. It probably**  
25 **took me some time to understand exactly what the**

1 passive recharge credits is prohibited by the  
2 existing Phase I and Phase II permit language,  
3 correct?  
4 **A. Yes.**  
5 Q. And it's also the District's position that  
6 because these are not one of the three topics  
7 identified by statute as allowable for permit  
8 change applications, there's not even a way for  
9 DWR to consider these issues without a new  
10 permit application, correct?  
11 **A. That is my position, or the District's position,**  
12 **yes.**  
13 Q. And, Mr. Boese, does it not follow that in the  
14 discussions about finding halfway meeting points  
15 and other things in the case that there are  
16 none, you're categorically against the notion of  
17 AMCs, aren't you?  
18 **A. Because I -- I do not believe that they are**  
19 **legal, yes. If the City wants to pursue**  
20 **changing some statutes and regulations, then I**  
21 **would consider them, but since there is no**  
22 **definition of AMCs, there is no statute that**  
23 **mentions AMCs, or rules and regulations, then**  
24 **I have -- then I would be in opposition of AMCs**  
25 **because I don't believe they exist under current**

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1 **statutes and regulations.**  
 2 Q. And, likewise, Mr. Boese, the District and you,  
 3 you're both categorically opposed to the  
 4 proposal to lower the 1993 index levels to the  
 5 proposed new levels, correct?  
 6 **A. With the -- with the way that the proposal was**  
 7 **submitted by the City, yes, because the items**  
 8 **that we believe should have been addressed in**  
 9 **that proposal are not in the proposal.**  
 10 Q. So to be clear, there are no permit conditions  
 11 that would change the District's position that  
 12 the District has taken in this case, correct?  
 13 **MR. STUCKY:** And I'm going to just  
 14 for the record object to the  
 15 characterization of the witness's testimony  
 16 as far as being categorically against. We  
 17 introduced exhibits, and, in fact, they  
 18 were discussed yesterday, where Mr. Boese  
 19 suggested some ideas where perhaps aquifer  
 20 maintenance credits, if they were allowed  
 21 by law, could be made aquifer neutral, and  
 22 he suggested some different ideas. In  
 23 fact, if you -- if you look at it that way,  
 24 it was basically a way to try and find  
 25 common ground and work with the District to

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1 try and see how the aquifer could be  
 2 protected. And so there was those exact  
 3 communications that occurred. Now, they  
 4 weren't responded to, but those  
 5 communications occurred from Mr. Boese. So  
 6 to say that he was categorically against  
 7 when the testimony yesterday indicated that  
 8 he actually tried to find ways to work with  
 9 the City, I think, is a misstatement of the  
 10 testimony.  
 11 **PRESIDING OFFICER:** Mr. Boese, would  
 12 you like to modify based on what Mr. Stucky  
 13 said? Do you --  
 14 **A. Yes, I don't think maybe I was -- I was real**  
 15 **clear. As far as the AMCs, because there is no**  
 16 **statute or regulation, I cannot be in favor of**  
 17 **them. If there was a statute and regulation**  
 18 **that allowed AMCs, then as Mr. Stucky eloquently**  
 19 **put it, we may be able to find permit conditions**  
 20 **that we would -- we would be in favor of those.**  
 21 **BY MR. MCLEOD:**  
 22 Q. But it's the District's position that -- that  
 23 it's not statutorily allowed to have AMCs,  
 24 correct?  
 25 **A. Statutory and regulatory, yes.**

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1 Q. And so as the law and regulations stand, isn't  
 2 it true, Mr. Boese, that there is no permit  
 3 condition or combination of permit conditions  
 4 that would make AMCs currently acceptable to the  
 5 District?  
 6 **A. I believe that would have to be a question for**  
 7 **my board of directors for us to discuss. I**  
 8 **don't know what these permit conditions are,**  
 9 **this hypothetical. I thought yesterday we**  
 10 **agreed to get away from hypothetical, but if we**  
 11 **want to go back, I don't know what hypothetical**  
 12 **conditions are being suggested. If you could --**  
 13 **if the City or the consultants could tell me**  
 14 **what those conditions would be, I would be glad**  
 15 **to review that and discuss that with my board,**  
 16 **if we could be -- if those would be something**  
 17 **that we could consider.**  
 18 Q. Are you saying you believe that there are permit  
 19 conditions that would make AMCs acceptable to  
 20 the Board even though the Board's position is  
 21 that they're legally not permitted by statute or  
 22 regulation?  
 23 **A. I believe that goes hand in hand; I think there**  
 24 **would have to be a regulation change and the**  
 25 **permit conditions that would be acceptable. I**

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1 **don't see what the hang-up would be with -- with**  
 2 **changing a regulation if we could find an**  
 3 **acceptable use of AMCs. And acceptable**  
 4 **conditions. But as has been noted before, the**  
 5 **Division of Water Resources and the City are not**  
 6 **in favor of a regulation change at this time.**  
 7 Q. So would you agree with me, Mr. Boese, that the  
 8 hearing officer in this hearing process can't  
 9 change statutes or regulations?  
 10 **A. That's correct.**  
 11 Q. And is it your understanding that the chief  
 12 engineer can't change statutes?  
 13 **A. That's correct.**  
 14 Q. And so for purposes of the process that we're in  
 15 within the confines of this process where we  
 16 have a hearing officer and a chief engineer that  
 17 can't change statutes and the District's  
 18 position that statutes don't permit AMCs, the  
 19 District's position is that essentially that  
 20 there's no way to get to AMCs within this  
 21 proceeding, correct?  
 22 **A. I'm not entirely sure that we need a statute**  
 23 **change. As you may be aware of, there is**  
 24 **nothing in statute that even mentions ASR,**  
 25 **perhaps there should be, but there is not, so a**



1 **regulatory change with appropriate conditions**  
2 **may be possible. Can that be done in this**  
3 **hearing process? No, but that could be**  
4 **something that could be suggested by the hearing**  
5 **officer, I suppose.**

6 Q. Maybe we'll come back to this later. Mr. Boese,  
7 in terms of well spacing waivers, it's the chief  
8 engineer that grants those waivers, isn't it,  
9 ultimately?

10 **A. Yes.**

11 Q. And so as to the issue of whether new waivers  
12 would be needed with a change in the lower index  
13 levels, that would be something that the chief  
14 engineer would determine, correct?

15 **A. Yes, but I think it would take a recommendation**  
16 **by the District Board because that has a GMD2**  
17 **specific regulation regarding well spacing. So**  
18 **if an applicant wants a spacing waiver, an**  
19 **exemption to a regulation, they must request**  
20 **that from the Board, the Board must make a**  
21 **recommendation to the chief engineer.**

22 Q. So let's back up, Mr. Boese. The waivers that  
23 exist, they -- they have been granted by the  
24 chief engineer, correct?

25 **A. I would assume so.**

1 Q. Mr. Boese, with respect to the procedural --  
2 procedural issues of how requests to modify  
3 permits are or are not considered, as I recall  
4 your main testimony, you indicated that  
5 statutory change applications could alter the  
6 use of water, the point of diversion, or place  
7 of use of the water, correct?

8 **A. If you're talking about K.S.A. 82a-708(b) --**  
9 **Q. Yes.**

10 **A. -- that allow for change application, yes, point**  
11 **of diversion, place of use, and use made of**  
12 **water are the three -- three conditions that can**  
13 **be changed.**

14 Q. And you indicated that the City's proposal not  
15 being one of those three things could not be  
16 submitted as a change application under that  
17 statute, correct?

18 **A. That's correct.**

19 Q. And that's the District's position in this  
20 hearing as well, isn't it?

21 **A. Yes.**

22 Q. And then in your main testimony, Mr. Boese, you  
23 indicated that -- that, however, to correct  
24 typographical errors or to supply omitted  
25 information or to reduce the rate or the

1 Q. And there has been no formal action of any kind  
2 by the chief engineer in validating those  
3 waivers, correct?

4 **A. Not that I'm aware of.**

5 Q. And if the lower -- lower index levels in the  
6 City's proposal were approved, that also would  
7 not automatically invalidate those waivers,  
8 would it?

9 **A. No, but I think it would call into question the**  
10 **validity of the District's recommendation which**  
11 **was required to be sent to the chief engineer**  
12 **when the applicant requested a waiver. There's**  
13 **a --**

14 Q. Are you -- are you aware of any source of law or  
15 regulation that says that the waiver issue would  
16 have to be revisited and go back to the Board?

17 **A. No, I think -- I think that would be something**  
18 **that I would take back to my board for review,**  
19 **if they would consider the recommendation of a**  
20 **waiver invalid. And also if you look at the**  
21 **MOU, would it also be in conflict with the**  
22 **District's MOU because the Board granted that**  
23 **waiver based on language in the MOU that says**  
24 **the water levels will not be withdrawn below**  
25 **1993 levels.**

1 place -- places or quantity, you don't need to  
2 file a formal change application under the  
3 statute, those can be considered by the Board  
4 without one?

5 **A. By the -- by the Board or by the chief engineer?**

6 Q. Let me ask both questions.

7 **A. Okay.**

8 Q. Is it your view that they can be considered by  
9 the Board without a change application?

10 **A. Yeah, I don't think the Board would have any --**  
11 **any sense of reviewing someone asking to reduce**  
12 **their permit or a typographical error, so those**  
13 **would be corrected by the chief engineer.**

14 Q. So you don't believe the Board would even need  
15 to be asked?

16 **A. For a correctional order on those sort of errors**  
17 **and omissions, is that what you're asking?**

18 Q. Well, on the things that we've mentioned, which  
19 in addition to correction of errors and  
20 omissions, would be changes in the rate, place,  
21 or quantity of reductions, I think you also  
22 referenced dividing existing rights and adding  
23 metering plans or conservation requirements to  
24 the permit, that you believed all those changes  
25 were changes that the chief engineer could make

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1 without a statutory change application?  
 2 **A. Yes.**  
 3 Q. And, Mr. Boese, given your other testimony  
 4 yesterday on direct that you believe in  
 5 black-and-white reading of statutes and  
 6 regulations and that there's no such thing as  
 7 close enough, I'm going to ask you to find for  
 8 us in the statutes or regulations the one that  
 9 says that the chief engineer can approve changes  
 10 for typographical errors, reductions in rate,  
 11 place, or quantity of use, supply of missing  
 12 legals, division of existing rights, the  
 13 addition of metering plans or conservation  
 14 requirements without a change application?  
 15 **A. There is none. What was -- I'm sorry, can you**  
 16 **rephrase your question, that was a very long**  
 17 **question?**  
 18 Q. Yeah, I think you answered it, I think you  
 19 agreed with me that there's not a provision in  
 20 statute or regulation that says the chief  
 21 engineer can do that without a change  
 22 application?  
 23 **A. I'd like to correct my answer, I am unaware of**  
 24 **that. I think I answered that definitively, and**  
 25 **I am unaware without reading the entire statutes**

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1 **and regulations if those are -- if there's some**  
 2 **language about correcting typos, errors and**  
 3 **omissions, I think there actually may be, but**  
 4 **I'm unaware of where it's at.**  
 5 Q. Well, Mr. Boese, we're going to have a break  
 6 later on so that your counsel can work in  
 7 another witness who's on a schedule, so if  
 8 during that break you could look through the  
 9 statutes and regulations that your counsel has  
 10 conveniently provided in the notebook, please do  
 11 that and then when we come back, we'll revisit  
 12 this question.  
 13 **A. Can you tell me exactly what you'd like for me**  
 14 **to look at during that time, noting that the**  
 15 **statutes and regulations are several hundred**  
 16 **pages long?**  
 17 Q. Yes, we're looking for a statute or regulation  
 18 that -- that supports your view that the chief  
 19 engineer can change permits to correct  
 20 typographical errors or to reduce rate, place,  
 21 or quantity of use or supply missing legal re --  
 22 legal descriptions, divide existing rights, add  
 23 metering plans or conservation requirements  
 24 without a change application.  
 25 **A. Okay.**

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1 Q. Mr. Boese, in your testimony about chloride  
 2 plume migration, you based, as I recall, your --  
 3 your expert opinion on the double pumping  
 4 scenario with -- with, I believe, existing  
 5 irrigation that was set forth in the USGS study,  
 6 I think that was Exhibit -- not sure what  
 7 exhibit that was.  
 8 **A. I believe it's 44 off the top of my head, but**  
 9 **we'll find out if I'm right in a minute, if**  
 10 **you'd like me to turn to it?**  
 11 Q. Yes, please.  
 12 **A. It is 44.**  
 13 Q. Okay. Mr. Boese, and the pumping scenario that  
 14 you have -- that you identified as the most  
 15 probative one in that study, as I recall, was  
 16 the scenario with double Wichita pumping plus  
 17 existing irrigation. Is that consistent with  
 18 your recollection?  
 19 **A. Yes, I believe so.**  
 20 Q. Now, Mr. Boese, to examine a little bit your  
 21 basis for that comparison, we know from the  
 22 tables in the City's proposal what the City  
 23 projects the volume of pumping would be in the  
 24 eight-year drought, correct?  
 25 **A. Yes.**

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1 Q. Volume wise, how does the pumping assumed in  
 2 that double Wichita pumping plus existing  
 3 irrigation scenario compare to the volume that  
 4 the City projected in the eight-year drought?  
 5 **A. I think we should make some distinction that**  
 6 **this USGS report is for quite a bit longer**  
 7 **period of time, I believe from 1990 to 2008, so**  
 8 **it's a longer period of time. Would you like a**  
 9 **mass difference between the two, a volume**  
 10 **difference between the two?**  
 11 Q. Let's try average annual difference between the  
 12 two?  
 13 **A. It may take me a little while to calculate that.**  
 14 **I have to find the table first, so it's going to**  
 15 **take just a little while because it's a very**  
 16 **long report. You're talking about only the City**  
 17 **of Wichita pumping comparison; is that correct?**  
 18 **I think that was the question you asked me, how**  
 19 **does the City's pumping compare to the --**  
 20 Q. Yes.  
 21 **A. Okay. And the reason I ask that because I think**  
 22 **these are two different areas as far as aerial**  
 23 **coverage, so I think it would be best to focus**  
 24 **on the Wichita pumping.**  
 25 **I believe I have an answer for you,**

1 **Mr. McLeod. But I would like to note that I did**  
 2 **that very quickly so I'm not going to guarantee.**  
 3 **Generally, I would like to spend a little more**  
 4 **time, and unfortunately neither one of them are**  
 5 **averaged in either reports, which is why it took**  
 6 **me so long, I had to average. For the double**  
 7 **pumping scenario in the USGS report, according**  
 8 **to my very quick calculations, again I want to**  
 9 **note, the average City pumping was 52,064**  
 10 **acre-feet, five two zero six four. And in the**  
 11 **City's drought modeling pumping, the average**  
 12 **total Equus Beds well field and ASR City pumping**  
 13 **was 45,481, so a difference of about 6,000 -**  
 14 **well, let me do the math here - about 6500,**  
 15 **6600 acre-feet average difference per year.**  
 16 **And, again, I'm going to again note that I did**  
 17 **that quickly and I'm not going to guarantee**  
 18 **those -- those results without some further**  
 19 **review.**  
 20 Q. I appreciate that, Mr. Boese. Let me first ask  
 21 you, although I think it has probably become  
 22 obvious in the exercise, prior to doing this  
 23 calculation on the stand just now, you had not  
 24 done it previously, had you?  
 25 **A. I don't recall. I don't -- I don't believe I**

1 **simulation offer an example of what could occur**  
 2 **during a drought. So, again, much like the**  
 3 **City's proposal, probably not as exactly how**  
 4 **they would operate, neither would this be**  
 5 **exactly how the pumping would be in a drought.**  
 6 Q. And, Mr. Boese, in the modeling scenario that  
 7 the USGS report produced from that -- that  
 8 scenario with the double City pumping and  
 9 existing irrigation, what was the modeled impact  
 10 on migration of the chloride plumes at each  
 11 level?  
 12 **A. It's pretty involved, you want me to go through**  
 13 **each and every scenario?**  
 14 Q. No, just that scenario we were looking at, the  
 15 double Wichita pumping and --  
 16 **A. Double Wichita pumping.**  
 17 Q. -- existing irrigation?  
 18 **A. That can be found on page 71 if you would like**  
 19 **to review it, the double pumping and existing**  
 20 **irrigation pumping scenario, that would be in**  
 21 **comparison to what they establish as a baseline,**  
 22 **which is just the normal pumping from 1990 to**  
 23 **2008, the actual reported pumping, for the**  
 24 **movement along the Arkansas River, in layer 1,**  
 25 **it was -- resulted in a rate of movement of**

1 **had. I had -- I had compared the City's pumping**  
 2 **compared to the double Wichita pumping, those**  
 3 **scenarios. And, again, they're a much longer**  
 4 **period of time, 19 years compared to eight**  
 5 **years.**  
 6 Q. And now that you look at this calculation,  
 7 Mr. Boese, you can see, can't you, that the  
 8 double pumping scenario actually involves a  
 9 greater volume of pumping than the City's  
 10 modeled eight-year drought?  
 11 **A. Some years it involves more, some years it**  
 12 **involves less, but as far as the average, I**  
 13 **would agree a difference of about 6500**  
 14 **acre-feet, I believe I stated, per year.**  
 15 Q. And so there's -- there's not an exact match  
 16 between the modeled eight-year drought and the  
 17 double pumping scenario, and because of that,  
 18 Mr. Boese, you don't really have a basis to  
 19 conclude that that double pumping scenario is  
 20 indicative of what would happen in the City's  
 21 modeled eight-year drought, do you?  
 22 **A. As far as a direct, are they equal, no, but I**  
 23 **would point out on page 62 of the report, USGS**  
 24 **does acknowledge that that is just a scenario,**  
 25 **but it -- as they state, results from this**

1 **810 feet per year, which is 150 feet faster than**  
 2 **the baseline scenario; in layer 2, 870 feet per**  
 3 **year, which was 90 feet faster, 90 feet per year**  
 4 **faster than the baseline; in layer 3, 740 feet**  
 5 **per year, which was 80 feet per year faster than**  
 6 **the baseline for the Burrton plume. Layer 1 was**  
 7 **350 feet per year, which was 50 feet per year**  
 8 **slower than the baseline scenario; 210 feet per**  
 9 **year in layer 2, which was 60 feet per year**  
 10 **faster than the baseline; and 440 feet per year**  
 11 **in layer 3, which is 130 feet per year faster**  
 12 **than the baseline scenario.**  
 13 **So other than layer 2 -- or other than**  
 14 **layer 1 in the Burrton, it increased the**  
 15 **movement. The reason for the layer 1 for the**  
 16 **Burrton plume has been opined in this report**  
 17 **that that could have been due to migration**  
 18 **during pumping from the upper zone to the lower**  
 19 **zone of that -- that water which then would have**  
 20 **slowed that movement down.**  
 21 Q. So looking at the document that actually was the  
 22 basis for the conclusions that you drew and  
 23 testified to earlier, we see once you've done  
 24 the calculation that with a lower -- or, excuse  
 25 me, with a higher average annual volume pumping

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1 than the City's modeled drought scenario, the  
 2 USGS scenario would still produce these chloride  
 3 migration numbers of only feet per year,  
 4 correct?  
 5 **A. That is correct.**  
 6 Q. And as to -- as to the upper layer of the  
 7 Burrton plume, the differential would actually  
 8 be that the migration would be slowed by 50 feet  
 9 per year?  
 10 **A. Again, I -- I think they offer some explanation**  
 11 **of that. During the drought when the -- when**  
 12 **the pumping is occurring, particularly from the**  
 13 **lower zone, there could have been movement from**  
 14 **the upper zone to the lower, which would have**  
 15 **then impeded that movement in the upper.**  
 16 Q. Now, in your main testimony, and, indeed, the  
 17 testimony of many witnesses, the District's  
 18 Counsel focused on the City's main benefits  
 19 analysis being the times during which the  
 20 aquifer is managed full and the City's not  
 21 drawing credits. And I'm going to ask you,  
 22 Mr. Boese, in the District's analysis to -- to  
 23 identify harms, has the District focused on the  
 24 time period during which credits would be  
 25 withdrawn?

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1 **A. I'm sorry, can you rephrase?**  
 2 Q. As opposed to the time periods in which the City  
 3 believes the aquifer could be managed full with  
 4 the permit changes, aren't the District's harm  
 5 analyses all focused on the time at which the  
 6 AMCs or physical recharge credits would be  
 7 withdrawn?  
 8 **A. For movement of the chloride plume, yes, when**  
 9 **the recharge credits would be withdrawn or the**  
 10 **1993 levels were lowered. I don't think the**  
 11 **City had any -- any analysis in their proposal**  
 12 **for either one.**  
 13 Q. And -- and also with respect to the minimum  
 14 desirable streamflow issue, the District has  
 15 focused on the time at which credits would be  
 16 withdrawn, correct?  
 17 **A. That is true. And, again, I don't think either**  
 18 **one are reported in the City's proposal, either**  
 19 **scenarios.**  
 20 Q. If the City had to -- I'm going to back up. Did  
 21 you do any analysis to determine if the City  
 22 lowered the aquifer to 1998 rates in order to  
 23 facilitate physical recharge credits what the  
 24 impact of that would be on chloride migration in  
 25 the aquifer?

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1 **A. Any specific analysis?**  
 2 Q. Any analysis?  
 3 **A. Well, again, I don't know that you necessarily**  
 4 **need a model, I mean, this was a model here, but**  
 5 **if you lower the water table, you increase the**  
 6 **hydraulic gradient, and saltwater contamination**  
 7 **will move at a faster rate, I mean, that's --**  
 8 **that's basic hydrology.**  
 9 Q. So if the 1998 -- if the City lowered the  
 10 aquifer to 1998 levels on a more or less  
 11 permanent basis to facilitate ASR physical  
 12 recharge, that would lower the gradient and  
 13 facilitate chloride migration, correct?  
 14 **A. Compared to what? Compared to where we're at**  
 15 **today or compared to 1993 levels?**  
 16 Q. Compared to where we're at today?  
 17 **A. Any reduction in the -- in the water level will**  
 18 **change the hydraulic gradient; it could be a**  
 19 **small change or it could be larger depending on**  
 20 **how much the hydraulic gradient is changed.**  
 21 Q. And do you think that there's a basis by which  
 22 you could compare, say, two years of the reduced  
 23 gradient at the 1993 levels to 20 years at the  
 24 1998 levels in terms of determining which of  
 25 those would have the greater impact on chloride

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1 migration?  
 2 **A. I'm -- I'm sorry, you lost me about halfway**  
 3 **through that, you mentioned a couple different**  
 4 **time frames and years and I got a little lost,**  
 5 **I'm sorry.**  
 6 Q. Again, I'll try to simplify it into two  
 7 scenarios. Scenario one, the City lowers the  
 8 aquifer to 1998 levels for a 20-year period to  
 9 facilitate physical recharge credit  
 10 accumulation. Scenario number two, water levels  
 11 are pumped to the 1993 levels in a drought but  
 12 it only lasts for two years.  
 13 **A. Uh-huh. That could be modeled, I believe, and**  
 14 **that's what USGS was attempting to do here was**  
 15 **different pumping scenarios, I believe that**  
 16 **could be modeled. I think the model needs some**  
 17 **refinement to get more accurate on that.**  
 18 Q. But without running modeling, you wouldn't be  
 19 able to give a ballpark on which of those  
 20 scenarios would be worse in terms of effect on  
 21 chloride migration?  
 22 **A. 1998 level for 20 years and 1993 level for two**  
 23 **years?**  
 24 Q. Two years?  
 25 **A. I -- I don't have any way to do that sitting**

1 here today.

2 Q. Thank you. Do you agree, Mr. Boese, that for  
3 whatever period the aquifer can be managed full,  
4 that is going to prevent lowering of gradient,  
5 and that is going to help retard the migration  
6 of the chloride plume, isn't it?

7 **A. I think as I stated before, basic hydrology says  
8 if you lower the water table, the hydraulic  
9 gradient increases and it causes movement,  
10 advective movement of the chloride  
11 contamination. So if you're asking which one is  
12 better, I don't know, that's something the City  
13 should perform and ...**

14 Q. So, conversely, if you increase the water level,  
15 does it have the opposite effect?

16 **A. Reduces the hydraulic gradient?**

17 Q. Yes.

18 **A. Yes.**

19 Q. And, Mr. Boese, with respect to minimum  
20 desirable streamflow, would you also agree that  
21 a full aquifer provides a benefit in the sense  
22 of improving or maintaining minimum desirable  
23 streamflow?

24 **A. Yes.**

25 Q. I want to ask you a few questions about some

1 credits?

2 **A. That's my understanding.**

3 Q. And does the District review the modeling for  
4 those -- those reports on recharge credits?

5 **A. We review the report. As far as the actual  
6 model being submitted to us, we review the  
7 inputs and outputs to that model. We don't  
8 actually run the model at our office for that,  
9 if that's your question.**

10 Q. That was my question, thank you.

11 **A. Uh-huh.**

12 Q. During the 2011, 2012 drought, when you were  
13 showing us the pictures of dried up riverbeds,  
14 Mr. Boese, did the -- did the City draw recharge  
15 credits in 2011 or 2012?

16 **A. Without looking at the 2011 and 2012 accounting  
17 report -- are you asking if they pumped the  
18 recharge credits, or are you asking if they  
19 recharged the aquifer with recharge water?**

20 Q. If they pumped recharge credits during that  
21 2011, '12 drought?

22 **A. I'm unaware if they did. If they did, it may  
23 have been for maintenance pumping. I know they  
24 normally do some maintenance pumping at some of  
25 the injection sites. I -- I don't believe they**

1 elements of the City's proposal that I'm not  
2 sure if you accept or reject. As far as the  
3 City's belief that in an eight-year drought  
4 water levels in -- in at least 17 of its index  
5 cells would drop below the 1993 levels, do you  
6 believe that that's a reasonably accurate  
7 assumption?

8 **A. That's what the model indicates based on  
9 starting at 1998 water levels. That's what the  
10 model indicates.**

11 Q. The model that was used, by the way, Mr. Boese,  
12 does the District use that model itself for a  
13 number of purposes, that MODFLOW groundwater  
14 modeling?

15 **A. Does the District use that model?**

16 Q. Yes.

17 **A. No, but KGS just updated that model and I  
18 actually have not used it yet. We just -- we  
19 just got the updated report from KGS that has  
20 taken that USGS MODFLOW model and done some  
21 extensive review and changes and calibration to  
22 it. We will begin using it now that our  
23 contract is over with the KGS.**

24 Q. Do you know if the -- if that model is used for  
25 purposes of the annual accounting for recharge

1 **withdrew recharge credits. Without extensively  
2 reviewing the accounting report, I can't say for  
3 sure.**

4 Q. You do know that wells in the aquifer were  
5 pumping during 2011 and 2012, correct?

6 **A. Wells, which wells are we talking about?**

7 Q. There were some wells in the aquifer pumping,  
8 weren't there, during 2011 and '12?

9 **A. I think that would be a fair assumption, yes.**

10 Q. Had -- had the District recommended denial of  
11 permits for any of those wells that were pumping  
12 in 2011 and '12 on the basis that they might  
13 have an adverse impact on minimum desirable  
14 streamflow?

15 **A. I'm a little confused, once the permit is  
16 issued, we don't recommend denial of a permit.  
17 Are you talking about if someone had an  
18 application pending, or are you talking about a  
19 permit that was issued --**

20 Q. Right, applications for wells pending, did the  
21 District deny any of them based on modeling the  
22 possible impact on minimum desirable streamflow?

23 **A. And so we're clear, the District can't issue  
24 permits, are you talking about making a  
25 recommendation to the chief engineer?**

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1 Q. Yes, let me clarify.  
 2 **A. No, I just wanted to make sure -- for the**  
 3 **record, we can't issue permits.**  
 4 Q. So the question is had the District, when  
 5 considering permits for wells that were pumping  
 6 during the 2011 and '12 drought, had the  
 7 District recommended that any of those be denied  
 8 based on their projected impact on minimum  
 9 desirable streamflow?  
 10 **A. You're really -- really quite confusing me**  
 11 **because you're asking if we were reviewing an**  
 12 **application for a pumping well. We wouldn't**  
 13 **have been reviewing a application for a pumping**  
 14 **well. The application has to be approved before**  
 15 **the well can pump, so I got -- I'm a little**  
 16 **confused on what your question was. If you're**  
 17 **asking if we were reviewing applications for --**  
 18 Q. Points of diversion?  
 19 **A. For proposed --**  
 20 Q. Yes.  
 21 **A. -- points of diversion? Because you said**  
 22 **pumping during '11 and '12 and I don't know how**  
 23 **a permit could have been pumping before its**  
 24 **approval. So if you're talking about reviewing**  
 25 **an application for a proposed point of diversion**

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1 **and proposed use, did we deny it based on**  
 2 **minimum desirable streamflow or recommend denial**  
 3 **based on minimum desirable streamflow, the**  
 4 **answer would be no.**  
 5 Q. And when you saw in 2011 and '12 that streambeds  
 6 were drying up, did you go to DWR and ask DWR to  
 7 use its power to administer and shut down wells  
 8 in the aquifer in order to revive minimum  
 9 desirable streamflow in those riverbeds?  
 10 **A. We did not but I do remember having some**  
 11 **discussions about -- because we had never gone**  
 12 **there before, never had to curtail groundwater**  
 13 **pumping to restore streamflow. That**  
 14 **conversation was beginning based on that reduced**  
 15 **streamflow in the Little Arkansas and Arkansas,**  
 16 **that discussion was beginning to occur, at least**  
 17 **a cursory discussion with Division of Water**  
 18 **Resources of do we need to begin to look at this**  
 19 **and model if groundwater should be curtailed**  
 20 **near the river.**  
 21 Q. During the 2011 and 2012 drought period, did the  
 22 District recommend approval of any new permits  
 23 that were proximate to the river?  
 24 **A. Which river?**  
 25 Q. The Little Ark?

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1 **A. Well, we have -- we have spacing requirements to**  
 2 **the Little Arkansas River, got to be a quarter a**  
 3 **mile away, so we would not allow -- we would not**  
 4 **recommend any -- any applications for approval**  
 5 **in close proximity to the river, and we haven't**  
 6 **for sometime.**  
 7 Q. Mr. Boese, did the District -- did the District  
 8 assist applicants for drought term permits  
 9 during the 2011 and 2012 drought in order to  
 10 enable irrigators to keep their wells pumping  
 11 despite the impact that was -- that was present  
 12 with minimum desirable streamflow?  
 13 **A. Did we assist with applications?**  
 14 Q. Yes.  
 15 **A. Yes.**  
 16 Q. And also multi-year flex accounts in that same  
 17 period, again with a view to keeping  
 18 irrigators' wells pumping?  
 19 **A. Yes, we assisted -- we assist any applicant that**  
 20 **asks for our assistance in filing paperwork.**  
 21 Q. Did you recommend approval of applications for  
 22 drought term permits, multi-year flex accounts,  
 23 and spacing waivers where necessary to allow  
 24 those irrigation wells to pump?  
 25 **A. I don't believe we did any review of drought**

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1 **term permits because that was Division of Water**  
 2 **Resources. I don't recall reviewing those, that**  
 3 **was a special one time that the chief engineer**  
 4 **allowed. We do -- we do review multi-year flex**  
 5 **account applications, and we recommend**  
 6 **multi-year flex account applications for**  
 7 **approval in the past. I can't speak to well**  
 8 **spacing waivers in relation to, what, multi-year**  
 9 **flex account or any application or ...**  
 10 Q. Any applications that could have had an impact  
 11 on minimum desirable streamflow during 2011 and  
 12 '12, did you -- did you recommend to approve  
 13 spacing waivers so that those applications could  
 14 be approved?  
 15 **A. I don't recall any spacing waivers being granted**  
 16 **for being too close to the Little Arkansas**  
 17 **River, if that's what you're asking. I don't**  
 18 **recall those. I'd have to look. I mean, I**  
 19 **don't specifically remember making a**  
 20 **recommendation to my board to waive a spacing**  
 21 **regulation to the Little Arkansas, but I'd have**  
 22 **to do some research. You're asking me what**  
 23 **happened eight years ago, so I'm not -- not real**  
 24 **sure. Not that I can recall.**  
 25 Q. Mr. Boese, I don't know if I've asked this

1 already, I hope I'm not being redundant, has the  
2 Board ever recommended denial of any permit  
3 application due to the possible impact on  
4 minimum desirable streamflow?  
5 **A. Not that I can recall. But I should note we**  
6 **don't have a regulation as part of our**  
7 **regulation application processing that requires**  
8 **us to examine minimum desirable streamflow, so**  
9 **we don't -- that's not on our checklist.**  
10 Q. And looking at captions of things which were  
11 found to be informative in your testimony  
12 yesterday, the act that establishes groundwater  
13 management districts, it's the Groundwater  
14 Management District Act, correct?  
15 **A. Correct.**  
16 Q. It's not the Streamflow District Act, is it?  
17 **A. No.**  
18 Q. Do you know, Mr. Boese, how did the 1993 bottom  
19 index levels generally compare to the channel  
20 depths of the Little Arkansas River?  
21 **A. Not without doing some review.**  
22 Q. Since 1993, hasn't considerable groundwater  
23 development for irrigation been approved along  
24 the east edge of the District that could affect  
25 Little Arkansas streamflow?

1 calculations on the effect the difference  
2 between the 1993 index levels and the proposed  
3 low levels would have on the Little Arkansas  
4 River streamflow?  
5 **A. No, and I don't think those are in the City's**  
6 **proposal, those calculations.**  
7 Q. Mr. Boese, looking at Exhibit 43 in the  
8 District's book.  
9 **A. Okay.**  
10 Q. Counsel had asked you in your main testimony if  
11 that table shows that other users in addition to  
12 the City of Wichita are good stewards in the  
13 sense of under-pumping. Do you recall that?  
14 **A. Which table are you referring to?**  
15 Q. On Exhibit 43 --  
16 **A. I don't know that there's a table. I think**  
17 **there's a map or a figure, if that's what**  
18 **you're --**  
19 Q. There was a graphic that you interpreted in your  
20 main testimony, and I'm not sure which page.  
21 **A. 61 perhaps?**  
22 Q. Yes, I think that's it on page 61. Do you  
23 recall that testimony from yesterday?  
24 **A. Yes.**  
25 Q. And Counsel was suggesting that -- that this

1 **A. There have been new permits issued. I don't**  
2 **know that they would impact -- you're talking**  
3 **about streamflow in the Little Arkansas?**  
4 Q. Yes.  
5 **A. Again, there would have been none approved that**  
6 **would have violated well spacing to the Little**  
7 **Arkansas River. If you're talking about the**  
8 **ones that are over along, I believe what you're**  
9 **probably talking to along Ridge Road, those**  
10 **were -- most of them were some distance from the**  
11 **Little Arkansas River. Again, we have a -- we**  
12 **have a spacing requirement to the Little**  
13 **Arkansas River that someone cannot put a well**  
14 **within a quarter of a mile of the Little**  
15 **Arkansas for that very reason.**  
16 Q. Did the District otherwise give any  
17 consideration to minimum desirable streamflow  
18 and approval of those permits?  
19 **A. No, but, again, we have a well spacing**  
20 **regulation specific that the well has to be a**  
21 **quarter of a mile from the Little Arkansas**  
22 **River, and that is strictly to prevent**  
23 **impairment to the Little Arkansas River and**  
24 **minimum desirable streamflow.**  
25 Q. Has the District performed any gradient

1 shows that all of these other users could also  
2 have been equally responsible with the City for  
3 the recovery of the aquifer since 1993. Was  
4 that how you understood the line of questioning?  
5 **A. I don't remember him saying equally. I think he**  
6 **was -- I think he asked me the question if other**  
7 **users were not using their fully authorized**  
8 **quantity; I don't remember the exact question**  
9 **about equally but ...**  
10 Q. It's not important to the point of my  
11 question --  
12 **A. Okay.**  
13 Q. -- Mr. Boese. My question is this graphic, it  
14 doesn't -- it doesn't show any changes between  
15 what these users were pumping in 1993 and what  
16 they're pumping today, does it?  
17 **A. No. I think this was a time period of 2005 to**  
18 **2014, if memory serves me correctly; this was**  
19 **the average -- average use and average**  
20 **sustainable use and the authorized quantity for**  
21 **those time periods.**  
22 Q. And so if those quantities were similar in 1993  
23 and they never changed up to this time period,  
24 it says nothing at all about whether they  
25 contributed to the recovery between 1993 and

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1 present day by changing their pumping behavior,  
 2 does it?  
 3 **A. Most of these areas in the District didn't --**  
 4 **didn't need recovery because they weren't in a**  
 5 **declining situation at the time. There's very**  
 6 **few areas in the District that are having**  
 7 **declines. One of them is the Wichita well**  
 8 **field, and the other one is in McPherson**  
 9 **Intensive Groundwater Use Control Area and parts**  
 10 **of McPherson, so there was no reason for the**  
 11 **water level to be restored in many parts of the**  
 12 **aquifer because it wasn't in any declining**  
 13 **situation in 1993. Is that your question?**  
 14 Q. No, my question was in terms of trying to figure  
 15 out whether there was any change in the pumping  
 16 behavior of any of these users from 1993 to  
 17 present date, we can't answer that question from  
 18 this graphic or any of the information that's  
 19 shown on it, can we?  
 20 **A. No, but I think we can answer the question that**  
 21 **largely the District is not in decline because**  
 22 **most of these users are not using their full**  
 23 **authorized quantity.**  
 24 Q. And, Mr. Boese, is that how users in the aquifer  
 25 manage to get along day to day even though some

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1 areas are over-appropriated?  
 2 **A. What do you mean by get along day to day?**  
 3 Q. That -- that people are getting the quantities  
 4 of water they need even though the allocations  
 5 that have been made may exceed safe yield in  
 6 some areas?  
 7 **A. I think that's certainly a reason why the water**  
 8 **levels are stable because these areas that are**  
 9 **appropriated are not being fully pumped.**  
 10 **MR. MCLEOD:** Madam Hearing Officer,  
 11 when you're done taking your note, this  
 12 would be a good place to break so that  
 13 Counsel for the District can work in the  
 14 witness that's on a schedule.  
 15 **MR. STUCKY:** We're also -- we're  
 16 actually fine going to 11:00, we think our  
 17 direct will easily finish today even with  
 18 stopping early, so it's fine for the City  
 19 to proceed till 11:00.  
 20 **PRESIDING OFFICER:** Well, actually,  
 21 I'm ready for a break so it's -- thank you  
 22 for the suggestion, it's 10:30, let's take  
 23 about ten minutes.  
 24 (Thereupon, a recess was taken;  
 25 whereupon, the following was had.)

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1 **PRESIDING OFFICER:** Okay. We're  
 2 back on the record. And, Mr. McLeod.  
 3 **MR. MCLEOD:** Thank you.  
 4 **A. Mr. McLeod, you'd asked me about where was**  
 5 **the -- some regulations or statutes where**  
 6 **corrections can be made?**  
 7 **BY MR. MCLEOD:**  
 8 Q. Yes.  
 9 **A. And I looked briefly, this is not an exhaustive**  
 10 **list, but there are some -- some in rules and**  
 11 **regs and statutes where corrections can be made.**  
 12 **I don't know if you want me to discuss that now**  
 13 **or not, but I did look and there are some**  
 14 **regarding point of diversion or place of use, if**  
 15 **there's better information that's made**  
 16 **available, there's corrections that can be made**  
 17 **to applications while they're pending. Do you**  
 18 **want to go into that now, or would you like me**  
 19 **to do that later?**  
 20 Q. No, let's do that now.  
 21 **A. Okay. I can -- I mean, I don't know how far you**  
 22 **want to go into that, but if you want to --**  
 23 **again, this is not an exhaustive list, I just**  
 24 **spent just a few -- a few minutes looking 'cause**  
 25 **I -- after our discussion, I knew there was --**

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1 **there was some language about corrections that**  
 2 **could be made. And if you want to look at**  
 3 **K.A.R. 5-5-6(c), which is in the DWR rules and**  
 4 **regulations under Exhibit 22. And, again, I**  
 5 **want to note this is probably not an exhaustive**  
 6 **list, I'd probably have to do a little more**  
 7 **work.**  
 8 **K.A.R. 5-5-6(c) is titled Authorized Point**  
 9 **of Diversion or Place of Use, and (a) says, if a**  
 10 **point of diversion or place of use meets the**  
 11 **following conditions, the authorized location**  
 12 **shall be administratively corrected by the chief**  
 13 **engineer to the more accurate location and the**  
 14 **owner notified of this action, and then it lists**  
 15 **some reasons why that could be corrected. I**  
 16 **don't know how much detail you want to go -- go**  
 17 **into that, but that would be a type of**  
 18 **correction that the chief engineer could make**  
 19 **with the findings and order. So that -- that**  
 20 **might be one example that you were referring to**  
 21 **how a location or place of use could be -- a**  
 22 **findings and order could be issued to correct**  
 23 **the location.**  
 24 Q. Okay.  
 25 **A. Does that help a little bit on that -- that**



1 issue?

2 Q. Were there any others that you found?

3 **A. Yeah, I'm just gonna -- I mean, honestly, I**  
4 **don't know if we want to use our time on this or**  
5 **not, but I'd be glad to -- if you give me a**  
6 **minute, I think I could -- as I said, it was a**  
7 **pretty fast process, and I could do some more**  
8 **work but -- I'm trying to find the page number**  
9 **for you, give me one second. I'm not finding**  
10 **exactly what I was looking for on that one. Let**  
11 **me go to another one here, sorry.**

12 **Let's go to K.S.A. 82a-710, Mr. McLeod.**

13 **This talks about an application being returned**  
14 **for correction to an applicant, so, again,**  
15 **there's a correction that can be made during an**  
16 **application process.**

17 Q. This would be preapproval, though, correct?

18 **A. Yeah, I believe so but it is a mechanism to**  
19 **correct an issue with an application. I think**  
20 **that was the main two. I can definitely do some**  
21 **more research, but for sure I wanted to point**  
22 **out K.A.R. 5-5-6 that allows for errors to be**  
23 **corrected, and I believe there are --**  
24 **essentially I just did a word search for the**  
25 **word correction, so I'm trying to move through**

1 here fairly quick, but I wanted to point out  
2 that there is some mechanism to correct.

3 **Let me see if I can find this other one**  
4 **here that maybe we could discuss. If not, I can**  
5 **do more work during the -- during the time --**  
6 **that word correction shows up multiple times,**  
7 **and I think that was your question, is there --**  
8 **is there able to be corrected, and there are**  
9 **some areas that allow for corrections.**

10 **Why don't I do some more work during the**  
11 **break, but I did for sure want to point out**  
12 **those two that allow for correction of an**  
13 **application and that the chief engineer can**  
14 **correct place of use and point of diversion.**  
15 **And I'll do some more work during the break, but**  
16 **there are some -- some mechanisms for some of**  
17 **those things that you mentioned, Mr. McLeod.**

18 Q. Okay. We'll revisit it after the next witness.

19 Mr. Boese, very early on in witness testimony in  
20 the case was the issue of the City having to  
21 make early decisions to take credits because of  
22 declining index levels in the event of drought,  
23 and the question I have for you today is does it  
24 help anybody to force the City to make that  
25 decision early in a drought and draw its credits

1 before the water levels go below the '93 index  
2 levels?

3 **A. I'm a little unclear on the statement when you**  
4 **say force, I don't think I or anybody else has**  
5 **the ability to force any water right owner to do**  
6 **any -- anything as long as it's allowed by their**  
7 **permit conditions. So I don't -- I disagree**  
8 **with your term force, I don't think there's**  
9 **anybody forcing the City to perform any action,**  
10 **that's their decision.**

11 Q. The City would have to make its decision earlier  
12 in a drought because of the 1993 index level, do  
13 you agree with that?

14 **A. That's a decision by the City and the city**  
15 **council and those that operate their water**  
16 **utilities on how they operate their -- their**  
17 **water distribution system. I -- I wouldn't**  
18 **pretend to tell them what to do.**

19 Q. Let me ask it this way, Mr. Boese, to help you  
20 out of the problem that you're having. If the  
21 City draws its credits early in a drought in  
22 order to avoid loss of those credits due to the  
23 declining index levels, how does that help any  
24 other user in the aquifer?

25 **A. I -- I guess I'm still having a little trouble,**

1 **you're asking how the City's pumping helps**  
2 **somebody else?**

3 Q. How does it help any other user in the aquifer  
4 that the City has taken those credits in the  
5 first or second year of the drought versus being  
6 able to wait perhaps five years to take those  
7 credits?

8 **A. I'm just having a little tough with your -- the**  
9 **question of help, I -- are you implying that the**  
10 **City should help another water right owner? I'm**  
11 **just a little off on the help.**

12 Q. No, I'm asking you is there any benefit to any  
13 other user of the aquifer that the City has  
14 had -- has taken a credit in, say, the first or  
15 second year of the drought versus waiting till  
16 the fifth or sixth year of the drought, does  
17 that provide any benefit to any other user of  
18 the aquifer if that happens?

19 **A. I guess I'd have to give that some thought.**  
20 **Whether the City pumps their credits early or**  
21 **late, it's still a quantity of water withdrawn**  
22 **that would impact the water level in the**  
23 **aquifer, so I -- I don't see a difference**  
24 **necessarily. You're talking about pumping early**  
25 **or pumping late, it's still a quantity of water**

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1 **being removed.**  
 2 Q. Because it's the same quantity, right, being  
 3 removed early or late?  
 4 **A. The difference is it can't withdraw those levels**  
 5 **below the 1993 levels, so once we hit the '93,**  
 6 **those credits cannot be removed, which does**  
 7 **provide a benefit to other users by not**  
 8 **depleting the aquifer any further.**  
 9 Q. But if they've been drawn before the index  
 10 levels decline below the 1993 levels, that  
 11 quantity of water is gone, isn't it?  
 12 **A. Yes, it's gone in either scenario.**  
 13 Q. Mr. Boese, when Mr. Pope was chief engineer and  
 14 issued the permit for the ASR Phase I project  
 15 rejecting passive recharge credits, was safe  
 16 yield his stated reason for rejecting passive  
 17 recharge credits?  
 18 **A. I don't think -- I don't believe he used the**  
 19 **term safe yield in that rejection. He -- he had**  
 20 **some other references about it was -- it was**  
 21 **representative water that could have been pumped**  
 22 **by the City that wasn't and also that there was**  
 23 **no source water being injected into the aquifer**  
 24 **for a passive recharge credit so therefore was**  
 25 **prohibited.**

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1 Q. So the basis of his rejection of passive  
 2 recharge credits was that he felt within the  
 3 language of the regulation that the words did  
 4 not allow a credit without physical injection,  
 5 correct?  
 6 **A. Yes, but safe yield would be a component of that**  
 7 **passive recharge credit because safe yield --**  
 8 **recharge credits are exempt -- or an ASR well is**  
 9 **exempt from safe yield because of the additional**  
 10 **water supply that is added to the aquifer. In**  
 11 **an AMC, there is no water -- or a passive**  
 12 **recharge credit, excuse me, there is no water**  
 13 **being added to the system, so safe yield would**  
 14 **be a component of that.**  
 15 Q. Do you know whether in the proposal that was  
 16 considered for passive recharge credits, do you  
 17 know whether they were proposed to be subject to  
 18 safe yield?  
 19 **A. The proposal for passive recharge credits?**  
 20 Q. Yes. At the time of the ASR Phase I permit  
 21 application?  
 22 **A. I don't know that there was a proposal submitted**  
 23 **for passive recharge credits; there was**  
 24 **discussion about passive recharge credits. I**  
 25 **don't know if there was an official application**

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1 **or document proposed similar to what we're**  
 2 **talking about today for passive recharge**  
 3 **credits.**  
 4 Q. We know they were under consideration because  
 5 the chief engineer issued an order specifically  
 6 prohibiting them, correct?  
 7 **A. There was some discussion, I don't know what**  
 8 **level that was, if that was a documented**  
 9 **proposal by the City or if there was a**  
 10 **discussion about it, I don't -- I don't know**  
 11 **that level of detail.**  
 12 Q. And the permit doesn't discuss any safe yield  
 13 issue with respect to those passive credits  
 14 because the chief engineer simply prohibited  
 15 them, correct?  
 16 **A. He does not discuss safe yield; he discussed**  
 17 **water not being injected into the aquifer,**  
 18 **which, again, I believe safe yield is a**  
 19 **component of that, that's why -- that's why**  
 20 **recharge credits are exempt from safe yield.**  
 21 Q. Now, Mr. Boese, I think you indicated during  
 22 your main testimony yesterday that you had some  
 23 involvement with -- at least you had reviewed  
 24 the MOU between the City and the District in  
 25 relation to the Phase I permit application. Was

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1 that correct?  
 2 **A. When it was being formulated or since then or**  
 3 **both?**  
 4 Q. When it was being formulated, did you?  
 5 **A. I -- I recall reviewing that MOU during the**  
 6 **permitting process for Phase I, yes.**  
 7 Q. Do you recall, Mr. Boese, that in the MOU for  
 8 Phase I, the District agreed not to oppose the  
 9 concept of passive recharge credits in those  
 10 permit applications? Do you recall that?  
 11 **A. In the MOU it says they do not oppose?**  
 12 Q. That they agreed to not oppose passive recharge  
 13 credits?  
 14 **A. Can I review the MO --**  
 15 Q. Please do.  
 16 **A. Can you tell me what exhibit it is?**  
 17 Q. I'm not sure what exhibit it is.  
 18 **A. I can find it. Looks like it is 25. Which**  
 19 **number are you talking about specifically?**  
 20 **MR. STUCKY:** To speed this up, could  
 21 we have a line that we're looking at?  
 22 **PRESIDING OFFICER:** I assume  
 23 Mr. McLeod is looking for it. Are you  
 24 finding --  
 25 **MR. MCLEOD:** I am looking for it.

1 And I am -- I am not finding it.

2 **BY MR. MCLEOD:**

3 Q. Mr. Boese, I may come back to it later after an  
4 opportunity to review documents, but for now,  
5 let me rephrase the question to ask you did --  
6 did the Groundwater Management District  
7 recommend that passive recharge credits be  
8 rejected in the issuance of a Phase I permit?

9 **A. Without reviewing all of the documents and going  
10 back into my office and looking at every single  
11 file, I don't know that I can answer. I believe  
12 they -- they remained silent on that issue, but  
13 I -- without doing further -- further review, I  
14 cannot tell you definitively what the Board's  
15 decision was on that.**

16 Q. Mr. Boese, do you remember a day when we were  
17 all in the courthouse in Newton, Kansas arguing  
18 motions and during the District's presentation  
19 on some motion papers, your counsel, Mr. Stucky,  
20 inadvertently stated on the record that the  
21 District had opposed passive recharge credits at  
22 the time of the Phase I permits, and you had to  
23 correct him on that point. Do you recall that?

24 **A. To be honest, I don't recall that. I -- I would  
25 have to go back and read the -- read the**

1 **transcript. That was, I think, over a year ago,  
2 but that could be -- that could have happened, I  
3 don't recall.**

4 Q. We'll revisit -- we'll revisit the foundational  
5 point later. Would you agree with me that if  
6 passive recharge credits are a problem for safe  
7 yield today, they would have been a problem for  
8 safe yield at the time of the ASR Phase I permit  
9 application?

10 **A. I'm not sure I can answer that question because  
11 I wasn't the primary person reviewing the Phase  
12 I application, so that's a little bit difficult  
13 for me -- if you're asking me do I think they  
14 are, then, yes, they are a problem with safe  
15 yield now and they would have been then, but I  
16 wasn't the primary staff member that was  
17 reviewing and providing recommendations to the  
18 Board at that time. Obviously the exemption to  
19 our safe yield regulations says an ASR well, an  
20 aquifer storage and recovery, storage meaning  
21 injecting water into the aquifer in my opinion.**

22 Q. So if we should be able to find documentation  
23 that shows that the District didn't oppose  
24 passive recharge credits over safe yield  
25 concerns, would you be able to explain why not?

1 **A. I don't believe -- unless they're detailed in  
2 that documentation, and I would be looking into  
3 the minds of both my coworkers and my board that  
4 I don't know that I could answer that without  
5 documentation. Again, I'll come back to the  
6 safe yield regulation, exemption, aquifer  
7 storage and recovery. It doesn't say an AMC, it  
8 doesn't say a passive recharge well; it says  
9 aquifer storage and recovery, and we've gone  
10 through those -- those regulations that deal  
11 with that more than once.**

12 Q. Mr. Boese, I know you were present when I asked  
13 Mr. Letourneau about two scenarios and then  
14 later your counsel asked Mr. Letourneau about  
15 two revised scenarios. And I want to pose for  
16 you the same scenario that I did for  
17 Mr. Letourneau. If in scenario one we start  
18 with the water level of X, the City then pumps  
19 the water level down in order to create recharge  
20 capacity, and let's use the gallon for  
21 simplicity that we have used, the City pumps the  
22 water level down a gallon, the City recharges a  
23 gallon, the water level is back to X, the City  
24 has a credit. In scenario two, we start with  
25 the water level at X, the City doesn't pump the

1 aquifer down because it's taken water to town,  
2 the City gets an AMC credit. In each scenario,  
3 the water level in the aquifer is at X, the City  
4 has a credit, how can safe yield be implicated  
5 in the AMC scenario if it's not in the physical  
6 recharge scenario?

7 **A. I think we should be clear the safe yield  
8 regulation, you won't find the word water level  
9 anywhere in the safe yield regulation. The safe  
10 yield regulation is a calculation based on  
11 authorized quantity, proposed quantity, and  
12 recharge capabilities of the aquifer. We don't  
13 evaluate safe yield based on water levels. In  
14 that case, every time the water level come up, I  
15 would be compelled to recommend new applications  
16 for approval, and every time the water level  
17 went down, I would be compelled to recommend  
18 applications for denial.**

19 **We look at a calculation, does discharge  
20 exceed recharge, application is recommended for  
21 denial. Does discharge -- discharge less -- I  
22 should say permitted discharge in both cases, is  
23 permitted discharge less than recharge, then we  
24 can recommend an application for approval. We  
25 do not evaluate water levels to determine safe**

19 **We look at a calculation, does discharge  
20 exceed recharge, application is recommended for  
21 denial. Does discharge -- discharge less -- I  
22 should say permitted discharge in both cases, is  
23 permitted discharge less than recharge, then we  
24 can recommend an application for approval. We  
25 do not evaluate water levels to determine safe**

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1 **yield. It doesn't mean we don't evaluate water**  
 2 **levels when we're reviewing an application, but**  
 3 **for safe yield purposes, it is a mathematical**  
 4 **calculation based on authorized quantity,**  
 5 **proposed quantity, and the recharge rate of the**  
 6 **aquifer for that area of consideration.**  
 7 **Under your scenario, when I am reviewing an**  
 8 **application, I would just merely look and say,**  
 9 **well, the water level is coming up or it's**  
 10 **stable, let's issue a permit; well, the water**  
 11 **level went down this year, let's deny a permit.**  
 12 **That's not the way -- that's not the way we**  
 13 **review safe yield. That's not what safe yield**  
 14 **means at all in my mind.**  
 15 Q. So let's hone in a little bit on the question  
 16 being whether safe yield, in fact, applies at  
 17 all. And in the physical recharge credit  
 18 scenario, we know that it does not, and in the  
 19 other scenario, aren't the considerations the  
 20 same? I mean, if the City withdraws the credit,  
 21 isn't the impact on the aquifer the same, just  
 22 the City withdraws the credit in the physical  
 23 recharge scenario?  
 24 **A. They're not the same; in the safe yield**  
 25 **regulation, we look at authorized quantity,**

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1 **proposed quantity, and recharge rate. We do not**  
 2 **look at what -- what entities pump. If we go**  
 3 **back to that KGS sustainability assessment, if**  
 4 **we looked at what the average water use is and**  
 5 **we use that for safe yield, we'd be issuing new**  
 6 **permits all over the place.**  
 7 Q. But if the question is not how to analyze within  
 8 the safe yield regulation but whether by policy  
 9 the safe yield regulation ought to apply, isn't  
 10 the situation in each scenario the same or the  
 11 effect on the aquifer and hence the effect on  
 12 all other users in the aquifer and hence the  
 13 effect on any other users' water rights in the  
 14 aquifer in scenario one and two?  
 15 **A. The volume of the water in the aquifer, I**  
 16 **believe, would be the same; however, we're not**  
 17 **talking -- you haven't -- you skipped the part**  
 18 **about when those recharge credits are withdrawn**  
 19 **under a new appropriation right where no**  
 20 **appropriation can be authorized. That is a**  
 21 **totally different scenario, that's a different**  
 22 **situation.**  
 23 Q. So let's look at that one too, I mean, when the  
 24 credit is drawn in a physical -- in the physical  
 25 recharge scenario, I mean, you've already

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1 indicated that within the Wichita well field  
 2 everything is appropriated and even  
 3 over-appropriated. And so in that sense,  
 4 somebody has, if you will, spoken for all of the  
 5 water that's there, and yet the City's allowed  
 6 to withdraw the physical recharge credit,  
 7 correct?  
 8 **A. Because they added to the supply, they enhanced**  
 9 **the recharge, that is correct.**  
 10 Q. So if that was your testimony in your main  
 11 testimony that your reasoning for why that's all  
 12 right and that should be different is because  
 13 the City has added to the supply, but,  
 14 Mr. Boese, if the City has, in fact, had to pump  
 15 the aquifer down in order to put that recharge  
 16 credit there, the City hasn't added to the  
 17 supply, has it?  
 18 **A. That would be a choice of stewardship of the**  
 19 **resource to the City. I -- I don't agree**  
 20 **with -- that that's a good stewardship. If the**  
 21 **City wants to make that decision, then they'll**  
 22 **have to live with their decision. If they want**  
 23 **to lower the water level to the 1998 levels and**  
 24 **start at a lower point going into a drought, if**  
 25 **the City is worrying about abandoning or**

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1 **orphaning their recharge credits, that would be**  
 2 **a really bad idea to pump the aquifer down and**  
 3 **then go into a drought, we're going to hit the**  
 4 **'93 levels earlier and they're going to --**  
 5 **they're going to shoot themselves in the foot so**  
 6 **to speak. But that's their choice, that's**  
 7 **their -- that's their choice.**  
 8 Q. But yet if the City wants to have recharge  
 9 credits under the currently applicable permit  
 10 conditions, that's going to be how the City has  
 11 to do it, correct?  
 12 **A. I'm not forcing the City to do anything.**  
 13 Q. But if the City wants to have recharge credits,  
 14 that's going to be the mechanism the City has to  
 15 follow to do it under existing permit  
 16 conditions, isn't it?  
 17 **A. If the City has exhausted all other remedies,**  
 18 **including multi-year flex accounts, upgrading**  
 19 **their infrastructure. As we can see right now,**  
 20 **I just looked at the last -- last month's**  
 21 **injection report from the City and they injected**  
 22 **water from the bank storage wells into -- into**  
 23 **Phase I and the recharge basin. Apparently,**  
 24 **there's still some room in the aquifer. If the**  
 25 **City has exhausted those and that's their choice**

1 **if they want to pump the aquifer down and put**  
2 **themselves in a worse position going into a**  
3 **drought, then that's -- that's their choice.**  
4 **I -- there's other options that I think the City**  
5 **should have looked at if they haven't, and if**  
6 **they have, they should revisit those.**

7 Q. Do you believe that that pumping of the aquifer  
8 down to create recharge capacity is preferable  
9 to the AMC proposal?

10 **A. Is preferable?**

11 Q. Right, do you think it's better, do you think  
12 that it yields a better result for the aquifer  
13 for the City to pump the aquifer down in order  
14 to recharge it than to leave the aquifer full  
15 because the City's getting AMCs?

16 **A. Well, it seems to me you're focused on when the**  
17 **recharge credits, again, are established and not**  
18 **when the recharge credits are withdrawn.**

19 Q. Would there be a difference when the credits are  
20 withdrawn? I mean, when the credits are  
21 withdrawn, does it matter what kind of credit  
22 they are?

23 **A. Well, under the AMC proposal the City would be**  
24 **able to expand their recharge -- capabilities of**  
25 **gaining a recharge credit at a much faster rate**

1 roughly 95 percent retention rate. Let me ask  
2 you first, do you agree that when the aquifer is  
3 at those much lower levels the City would get  
4 that much higher retention rate of physical  
5 credits?

6 **A. Yes, I haven't evaluated those numbers if 95**  
7 **percent is right. I do know currently what**  
8 **the -- what the retention rate is on the**  
9 **physical recharge credits based on the**  
10 **accounting report. I haven't evaluated if it's**  
11 **true they would obtain 95 percent at the '98**  
12 **levels. Certainly, the higher the aquifer, the**  
13 **more -- the more would flow out of the aquifer**  
14 **the fuller it is.**

15 Q. And in that sense, certainly, the City's  
16 proposal, the AMCs would allow the City to  
17 accumulate credits on a full aquifer faster than  
18 it could by physical recharge, correct?

19 **A. Can you rephrase that? You lost me a little bit**  
20 **under what --**

21 Q. The City's proposal, the AMCs would allow the  
22 City to accumulate credits with the aquifer full  
23 faster than the City could accumulate physical  
24 recharge credits with the aquifer full, correct?

25 **A. With the current infrastructure, that appears**

1 **than they are right now under physical; they**  
2 **would create more recharge credits so they could**  
3 **pump more.**

4 Q. And in part, though, Mr. Boese, wouldn't that be  
5 due to the fact that the aquifer now is full,  
6 and the fact that the aquifer is full greatly  
7 limits the City's ability to put credits in and  
8 have them retained in the aquifer?

9 **A. That's the City's position; I haven't fully**  
10 **evaluated that. Obviously, as I just said,**  
11 **we're claiming the aquifer is full, which I**  
12 **think we should talk about that maybe in a**  
13 **little bit what full means, but there was**  
14 **recharge activities as early as a month ago**  
15 **by -- by the City. So apparently the aquifer is**  
16 **not completely full.**

17 Q. Well, Mr. Boese, you were present for the part  
18 of Mr. McCormick's testimony where Counsel  
19 walked him through calculations to show that  
20 only about 64 percent of credits that are  
21 injected with the aquifer's current -- current  
22 levels are retained. Do you remember that?

23 **A. Yes.**

24 Q. And whereas in the -- in the proposal, at 1998  
25 water levels there was an indication of a

1 **that would be correct, with the City's current**  
2 **physical recharge infrastructure.**

3 Q. Well, Mr. Boese, isn't the problem really the  
4 leakage out of the full aquifer into the  
5 adjacent streams? What -- what change could the  
6 City make to its infrastructure that would cause  
7 a difference in --

8 **A. I'm sorry, I thought you were talking about**  
9 **accumulating recharge. Were you talking about**  
10 **retaining what they already put in the ground,**  
11 **or were you talking about accumulating? I**  
12 **thought I heard you say accumulate recharge**  
13 **credits, that's two different things.**

14 Q. Is it? I mean, aren't the credits only  
15 accumulated when they're confirmed by the  
16 accounting report, isn't that when the City can  
17 recognize and potentially draw them?

18 **A. Yes, the annual accounting report.**

19 Q. And so irrespective of whatever the City is  
20 injecting, if 50 percent of it's leaking out,  
21 the City is not accumulating credits for that  
22 when the annual accounting report is done,  
23 right?

24 **A. They're --**

25 Q. The City is not going to get credits for the

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1 leakage out?  
 2 **A. They're still accumulating recharge credits,**  
 3 **it's just minus whatever was leakage out.**  
 4 Q. Right, minus the leakage out. And my question  
 5 for you on infrastructure is given that, what  
 6 difference does it make how many new facilities  
 7 the City builds for injection, if the City is  
 8 just injecting, injecting, and watching it all  
 9 leak out of the full aquifer, how is that going  
 10 to help the City accumulate physical recharge  
 11 credits?  
 12 **A. Well, I think there's two components to that.**  
 13 **Again, you're -- you're confounding accumulation**  
 14 **and leakage, but maybe I can address what you're**  
 15 **saying, that the current high leakage that the**  
 16 **City's experienced with the recharge credit is**  
 17 **recharge basin 36, which is on the extreme**  
 18 **eastern edge of the basin storage area. If**  
 19 **there were other -- if they were injecting water**  
 20 **other than into that basin, to the west, the**  
 21 **leakage would not be near as high, so we're**  
 22 **really looking at some very skewed results**  
 23 **because most of the Phase II water is going into**  
 24 **recharge basin 36, which is eastern edge, closer**  
 25 **proximity to the river so the leakage is higher.**

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1 **I have not seen anything that the City has**  
 2 **modeled to show what would happen if they**  
 3 **installed recharge basins to the west, what that**  
 4 **leakage would be.**  
 5 Q. Well, Mr. Boese, isn't the reason that most of  
 6 the leakage is occurring with respect to  
 7 recharge basin 36 and also the reason that most  
 8 of the water is going in there that the City  
 9 can't recharge with its injection wells when the  
 10 aquifer is full?  
 11 **A. Their injection is limited with their wells,**  
 12 **that sounds like an engineering issue that needs**  
 13 **to be resolved and see if there can be any**  
 14 **upgrades. It appears to me that the recharge**  
 15 **wells are not near able to handle the amount of**  
 16 **recharge water as the basin can, whether the**  
 17 **aquifer is full or low. I think that's a --**  
 18 **that's a known -- known issue.**  
 19 Q. I don't think we're making progress, so I'll  
 20 move on rather than have further back and forth  
 21 on that.  
 22 Mr. Boese, in your main testimony, you had  
 23 again indicated with respect to safe yield  
 24 calculations that you had done thousands of safe  
 25 yield calculations, and my question about that

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1 is similar to the one I asked early in cross  
 2 today, did you perhaps mean hundreds of safe  
 3 yield calculations?  
 4 **A. I think it's probably thousands, to be honest**  
 5 **with you. I mean, it's -- it's over a thousand,**  
 6 **I can say that pretty definitively because I do**  
 7 **them not only on every application, but I also**  
 8 **do them at individual request, whether they're**  
 9 **an irrigator, I've done them for cities, I've**  
 10 **done them for industries who are looking at new**  
 11 **appropriations, they want to know if there is**  
 12 **water available in a location before they make**  
 13 **the application. So we do preliminary safe**  
 14 **yield evaluations, and maybe I should clarify**  
 15 **that a little bit between an official safe yield**  
 16 **evaluation that we do for an application**  
 17 **compared to a preliminary safe yield evaluation.**  
 18 Although they are identical for the most  
 19 part, I may spend a little more time on an  
 20 official one to ensure that every data set is  
 21 correct. Preliminary one looks just like the  
 22 safe yield evaluation that we looked through  
 23 yesterday, and I do many of those every year for  
 24 folks that are looking for possible new  
 25 appropriations, whether they're irrigators,

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1 **municipalities, industries, recreational, stock**  
 2 **watering, just we get a lot of requests for**  
 3 **preliminary safe yield evaluations. So I lumped**  
 4 **that into that number, if that helps.**  
 5 Q. So the reason why we would have thousands of  
 6 safe yield calculations even though there were  
 7 only hundreds of permits that you reviewed is  
 8 you do these preliminary safe yield evaluations  
 9 for people who are thinking about permit  
 10 applications?  
 11 **A. Yes, we get -- we get numerous preliminary safe**  
 12 **yield evaluations every month. I -- I can't**  
 13 **tell you what the average number is, but it's --**  
 14 **it's well over 100 a year of those that we**  
 15 **generally do, those preliminary evaluations.**  
 16 Q. Mr. Boese, as you were going through the 30  
 17 different locations that you had done safe yield  
 18 calculations for City points of diversion, in  
 19 your main testimony yesterday you indicated that  
 20 most of the wells in these areas you were  
 21 looking at for your safe yield calculations had  
 22 been approved before safe yield requirements  
 23 were in effect, and I have to ask you that most  
 24 suggests to me that you're saying that some were  
 25 approved after the current safe yield

1 calculations requirements were in effect.  
2 **A. Well, the only reason I -- I stated that is**  
3 **there may have been one or two small use**  
4 **applications, and without reviewing each one, I**  
5 **would have to -- I would have to look. But that**  
6 **area has been effectively closed to new**  
7 **appropriations since the safe yield regulation**  
8 **went into effect in 1979 or 1980.**

9 **The District was one of the first areas in**  
10 **the state that had a safe yield regulation. My**  
11 **memory is failing me if it was 1979 or 1980, but**  
12 **there has been, in my recollection, no new**  
13 **permits that have been issued, unless they would**  
14 **have been a small use type permit. Again, I'm**  
15 **talking about the Wichita well field central**  
16 **location only. I'm not talking about anywhere**  
17 **else. Other than these ASR permits. And maybe**  
18 **some temporary type permits for construction or**  
19 **dewatering or something like that. So that's**  
20 **why I said most, I didn't want to -- in case**  
21 **there was one or two, perhaps, small use permits**  
22 **that would have been in that.**

23 **But as far as, let's say, a new irrigation**  
24 **right or a new municipal right or a new**  
25 **industrial right in that Wichita well field, I**

1 **can't think of any that have been approved since**  
2 **then. Of course, I was not with the District**  
3 **until 1992, so between 1980 and 1992, I don't**  
4 **know that I can -- I can attest to.**

5 Q. **Mr. Boese, in the -- in K.A.R. 5-22-7, is**  
6 **nonconsumptive use an exception to safe yield?**

7 **A. It is. I'm going to turn to that if that's all**  
8 **right with you. I'm there.**

9 Q. **And I think the question was already asked and**  
10 **answered.**

11 **A. Oh, I thought maybe you wanted me to reference**  
12 **or read it.**

13 Q. **No, that's all right. Mr. Boese, you had**  
14 **indicated in your -- in your main testimony**  
15 **after you reviewed all of the calculation**  
16 **numbers on the City's various points of**  
17 **diversion that you did safe yield calculations**  
18 **for that in a lot of places that the well site,**  
19 **the point of diversion would be considered**  
20 **over-appropriated just by the City itself and**  
21 **made worse by others. Does that imply that the**  
22 **City was first in time and that then other**  
23 **junior users were approved that made that**  
24 **condition worse?**

25 **A. Well, without reviewing each one of those, I --**

1 **I can't say that the City is senior, has senior**  
2 **water rights in every one of those locations,**  
3 **but by and large, I think the City's water**  
4 **rights are for the most part senior to most**  
5 **others in the Wichita well field area. There**  
6 **may be some that are -- that are senior; without**  
7 **reviewing, I don't know. And that -- that**  
8 **doesn't attest any to domestic well owner that**  
9 **may be senior to the City applications.**

10 Q. **And for that reason, I mean, such a breakdown, I**  
11 **think, would have been useful. How long would**  
12 **it take you to do such a breakdown showing**  
13 **who -- who actually is senior in each of those**  
14 **areas?**

15 **A. It would depend on how I sorted the -- the**  
16 **spreadsheet. If they're sorted by water right**  
17 **file, it would be fairly easy. If they're not**  
18 **sorted by water right file, it would take me a**  
19 **considerable amount of time, one that you would**  
20 **not want me to do at this -- at this hearing**  
21 **without giving me some time. I could review**  
22 **those and look if you would like. It depends on**  
23 **how I sorted the -- the spreadsheet output for**  
24 **those safe yield calculations. If they're by**  
25 **file number, it's fairly simple because in**

1 **Kansas, water rights are sequential, water right**  
2 **number 1 is before water right number 2; so if I**  
3 **sorted them that way, that may be somewhat easy**  
4 **for me to do. If I didn't sort them that way,**  
5 **it would not be fun.**

6 **MR. MCLEOD: Madam Hearing Officer,**  
7 **I know this is somewhat irregular, but I**  
8 **don't want to take the time for Mr. Boese**  
9 **to do that on the stand today. Would it be**  
10 **permissible to have Mr. Boese provide that**  
11 **breakdown in the period for written comment**  
12 **after the hearing has been adjourned?**

13 **PRESIDING OFFICER: What exactly are**  
14 **you wanting him to provide?**

15 **MR. MCLEOD: In those safe yield**  
16 **calcs a breakdown of the appropriations in**  
17 **the radius we're looking at so that we know**  
18 **who the senior rights holders are in those**  
19 **areas. The consideration being as to**  
20 **any -- any alleged impact or impairment**  
21 **would the City simply be impairing, if you**  
22 **would, its senior rights?**

23 **MR. STUCKY: Can I speak to that?**

24 **PRESIDING OFFICER: Yes, please.**

25 **MR. STUCKY: You know, I don't have**

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1 any objection to the City -- or to  
 2 Mr. Boese being allowed to perform some of  
 3 the research and the work for the City, I  
 4 mean, this is essentially performing work  
 5 and research that the City could have or  
 6 should have done in advance of this  
 7 hearing. I don't have a problem with that  
 8 in exchange for us being able to look at  
 9 those hydrographs and that lithologic data  
 10 that I think is very germane to this  
 11 hearing. I'm not sure the relevance here,  
 12 but those -- that lithologic data and that  
 13 research that was performed and was done by  
 14 the District.  
 15 So in exchange for Mr. Boese being asked  
 16 to do this research, I would be asked to go  
 17 down that line of questioning in return  
 18 because I think that is crucial to the very  
 19 outcome of this hearing. And something  
 20 every -- everybody should be quite  
 21 concerned with, including the Division of  
 22 Water Resources.  
 23 **MR. MCLEOD:** First, I'm -- I'm not  
 24 going to offer that trade or exchange, so  
 25 if the answer is no in terms of Mr. Boese

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1 producing this additional information that  
 2 he doesn't know today, that's fine. But  
 3 Mr. Boese has testified to conclusions  
 4 about impairment of senior rights, and I  
 5 think without knowing who the senior rights  
 6 holders are in each of those radii that  
 7 opinion is hollow. That's just -- I will  
 8 say that.  
 9 **A. I'm -- can I ask a question, I'm a little**  
 10 **confused on what I'm being asked?**  
 11 **PRESIDING OFFICER:** I am -- I am  
 12 too, go ahead.  
 13 **A. Mr. McLeod, this is kind of awkward, I'm going**  
 14 **to ask you a question. Are you asking that I**  
 15 **determine for the City's native water rights, or**  
 16 **are we talking about the recharge permits, what**  
 17 **is senior and what is junior? 'Cause in those**  
 18 **two-mile circles there are the City's native**  
 19 **water rights, Harvey County 6, Water Right 388,**  
 20 **and Water Right 1006. There's also their ASR**  
 21 **Phase II permit applications -- or approvals are**  
 22 **also in that -- in that two-mile circle. Which**  
 23 **one are you asking me to determine which ones**  
 24 **they are senior and junior to?**  
 25 **BY MR. MCLEOD:**

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1 Q. So, I mean, probably both would be necessary,  
 2 but did you make any differentiation as you were  
 3 forming your conclusions that senior rights  
 4 would be impaired?  
 5 **A. And senior rights impaired by who?**  
 6 Q. That -- your conclusion that senior rights would  
 7 be impaired by allowing AMCs in any -- at any of  
 8 these points of division because in your view  
 9 all of them were over-appropriated under safe  
 10 yield?  
 11 **A. I was talking about the priority based from the**  
 12 **City's ASR Phase II permits, the ones that are**  
 13 **under consideration today; I was not talking**  
 14 **about the City's native water rights. I was**  
 15 **talking about the senior water rights that are**  
 16 **senior to the ASR Phase II applications.**  
 17 **MR. STUCKY:** And can I just lodge an  
 18 objection for the record? This line of  
 19 questioning is misstating the witness's  
 20 testimony. So what the witness testified  
 21 yesterday is if these AMCs are indeed a new  
 22 appropriation subject to safe yield, then  
 23 all prior water rights would -- would be  
 24 senior to when the City gets -- if the City  
 25 gets this approved. At that moment in

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1 time, all water rights in the Equus Beds  
 2 Aquifer would then be senior, and it  
 3 doesn't matter if they were 1972, doesn't  
 4 matter if they're 1985, it doesn't matter  
 5 if they're 1999, they're all senior, that's  
 6 what the witness's testimony was, that an  
 7 AMC is, if adopted, if legal, is a new type  
 8 of appropriation. So this line of  
 9 questioning is not relevant. So my  
 10 question is relevance and misstates the  
 11 testimony.  
 12 **BY MR. MCLEOD:**  
 13 Q. I'd -- I'd like to ask the witness if  
 14 Mr. Stucky's right, Mr. Boese, what's your  
 15 understanding of the priority, if AMCs were  
 16 approved, what's your understanding of the  
 17 priority that AMCs would have?  
 18 **A. They'd be junior to every other water right in**  
 19 **the -- I mean, their file numbers are junior**  
 20 **that we're proposing today, those are all junior**  
 21 **to every water right in the -- in the well**  
 22 **field. They're -- the ASR Phase II are already**  
 23 **junior; the AMC would just allow expansion of --**  
 24 **of those recharge credits and they would be**  
 25 **junior.**



1 Q. Okay. And your answer to that question is based  
2 on the filing date of the ASR Phase II permit  
3 application, is that my understanding?

4 **MR. STUCKY:** And I'm going to object  
5 again, his testimony was he stated new  
6 applications would be required, and if new  
7 applications are being -- would be  
8 required, it would be brand-new water  
9 rights; in that sense, it would be junior  
10 to all other water rights in the aquifer,  
11 that was his testimony.

12 **MR. OLEEN:** May I interject just --  
13 in the dogfight just to say Mr. Stucky  
14 thinks he knows what the witness testified  
15 to; the witness is on the stand, he can say  
16 what he testified to, or we can ask our  
17 great stenographer to read back lines of  
18 questioning from the prior days.

19 **MR. STUCKY:** I'll -- I'll withdraw  
20 the objection.

21 **PRESIDING OFFICER:** Well, I'm  
22 confused.

23 **A. I can answer the question, the ASR Phase II**  
24 **permits that we're looking at today are junior.**  
25 **If the City files new permits for AMCs, which I**

1 **believe are required, they would be junior too,**  
2 **they would also be junior. All the City's ASR**  
3 **Phase II permits, existing and any pending in**  
4 **the future, are junior. It's based on the**  
5 **priority date of the application. ASR Phase II**  
6 **existing has a priority date; AMCs, if you file**  
7 **new applications for those, would have a**  
8 **priority date. Those are all junior to what's**  
9 **out there today.**

10 **BY MR. MCLEOD:**

11 Q. Thank you. And my question was whether you were  
12 basing that on the date of the application  
13 because I believe Counsel indicated he thought  
14 it would be if and when the concept was  
15 approved?

16 **A. Well, they're already junior, so I don't know --**  
17 **I mean, they're junior and in my opinion, they'd**  
18 **have to file new applications, they would also**  
19 **be junior. Every one of the ASR Phase II**  
20 **application permits are junior to what's out**  
21 **there. Whether they're AMCs or physical,**  
22 **they're all junior.**

23 **PRESIDING OFFICER:** Thank you, that  
24 clarifies something for me.

25 **A. In relationship to the work that, Mr. McLeod, I**

1 **don't know if you are still asking me to do**  
2 **that, I -- I do not have a way to evaluate the**  
3 **priority of the domestic water rights that are**  
4 **in the area, they don't have a file number. As**  
5 **you know, domestic water rights don't have to**  
6 **have a file number; it's the date that they can**  
7 **prove they first started using water. I cannot**  
8 **tell you if the City's water rights are junior**  
9 **or senior to any domestic wells.**

10 **BY MR. MCLEOD:**

11 Q. Okay. I will withdraw the request in any event.

12 Mr. Boese, I know a question came up  
13 yesterday about whether rules of construction in  
14 Kansas contemplate interpretation of statutes or  
15 regulations based on their captions, and I don't  
16 think anyone has briefed it yet, but I'm just  
17 going to ask the question this way: If  
18 Mr. Oleen is right in his premise that we don't  
19 interpret statutes or regulations by language in  
20 their sections, is it possible that your  
21 interpretation from yesterday based on a  
22 regulatory title could be wrong?

23 **A. Gosh, you lost me, Mr. McLeod, I may have to ask**  
24 **you to rephrase that or I'm not exactly -- I**  
25 **didn't understand the question. I'm not trying**

1 **to be difficult, I just did not understand the**  
2 **question.**

3 Q. I'll withdraw it. I think at some point  
4 somebody will probably brief it.

5 **PRESIDING OFFICER:** I'm going to  
6 stop here for a second and ask about our  
7 other witness who's time limited, are we --  
8 **MR. STUCKY:** Our plan is, Madam  
9 Hearing Officer, the pizza has been  
10 ordered, anyone in the room is welcome to  
11 partake of it, the individual that ordered  
12 it is going to pick up a credit card here  
13 shortly, and it should be here about noon.  
14 And so our idea was if we could break at  
15 noon, eat some pizza for 15 minutes, and  
16 then start with the next witness.

17 **PRESIDING OFFICER:** Okay, that's  
18 fine. I just didn't want to be running  
19 into the time that you need for him. Okay.  
20 Sorry, Mr. McLeod, go ahead.

21 **BY MR. MCLEOD:**

22 Q. Mr. Boese, looking back to where we started  
23 cross today with K.S.A. 82a-702.

24 **A. Yes.**

25 Q. Would you agree with me that that is a -- a

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1 basic section of the Kansas Water Appropriation  
 2 Act in the sense that anybody who does not  
 3 understand that section and its application does  
 4 not understand the Kansas Water Appropriation  
 5 Act?  
 6 **A. I -- I guess you're asking me if somebody who**  
 7 **doesn't understand that doesn't -- I don't think**  
 8 **I can answer for somebody else in that regard.**  
 9 Q. Do you think an understanding of that section of  
 10 statute is essential to a working understanding  
 11 of the Kansas Water Appropriation Act as a  
 12 whole?  
 13 **A. It's part of the Water Appropriation Act, so I**  
 14 **think all the Water Appropriation Act sections**  
 15 **are -- are important. I'm not following your --**  
 16 **what you're asking me. I apologize.**  
 17 Q. Let's move on. Mr. Boese, way back in Joe  
 18 Pajor's testimony, I think he became  
 19 argumentative with Counsel on the point that if  
 20 you make this argument about all the water in  
 21 the aquifer is spoken for, then the physical  
 22 recharge credit presents the same problem as an  
 23 AMC in terms of possibly taking water already  
 24 dedicated to other users. And I'd like you to  
 25 address in any way you can distinguish to show

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1 why that is a different problem for water that's  
 2 taken from that over-allocated area with a  
 3 physical credit versus an AMC?  
 4 **A. I would agree that all the water in the -- in**  
 5 **the well field is dedicated to other users, all**  
 6 **the groundwater. The only way that you can**  
 7 **dedicate any other water to anybody else is by**  
 8 **adding to the resource, by injecting treated**  
 9 **source water into the aquifer, that then becomes**  
 10 **additional supply.**  
 11 Q. But, again, Mr. Boese, if the City has had to  
 12 pump the aquifer down to add that water, it's  
 13 really not additional supply, is it?  
 14 **A. When you add a gallon of source water to the**  
 15 **aquifer, that is additional supply. What the**  
 16 **City did prior to that was the City's decision.**  
 17 **What the irrigator did prior to that was the**  
 18 **irrigator's decision. I'm talking about adding**  
 19 **to the supply, the only way to do that is to add**  
 20 **treated source water into the aquifer. It's not**  
 21 **water that was not pumped. That doesn't add**  
 22 **water, that doesn't add a gallon; when you don't**  
 23 **pump a gallon, it doesn't add a gallon. There**  
 24 **is no additional -- that was just water that was**  
 25 **already dedicated that wasn't used. The only**

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1 **way that you can dedicate more water is by**  
 2 **adding to that supply.**  
 3 Q. But so if you withdraw a gallon and then add a  
 4 gallon, isn't the water in the aquifer where it  
 5 was before you took the gallon?  
 6 **A. It's where it was, but we're now talking about**  
 7 **water rights and property rights, that's a**  
 8 **different situation.**  
 9 Q. And yet now by virtue of having taken the gallon  
 10 and added a gallon, there's a credit, correct, a  
 11 physical recharge credit?  
 12 **A. You didn't have to take a gallon to add a**  
 13 **gallon.**  
 14 Q. Well, if the aquifer is full, you did, right? I  
 15 mean, if you need to create capacity for  
 16 recharge --  
 17 **A. Ah, you said need. No one forced them to -- no**  
 18 **one is forcing the City to gain a recharge**  
 19 **credit, that's the City's decision, and how they**  
 20 **gain them is up to them.**  
 21 Q. But if the City -- if the City wants the credit  
 22 and so pumps the aquifer down a gallon and then  
 23 injects a gallon, the water is -- the water in  
 24 the aquifer is where it was before the City did  
 25 anything and now the City has got a credit,

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1 correct?  
 2 **A. Yes. I -- I still disconnect with no one made**  
 3 **the City pump a gallon down to add a gallon.**  
 4 **That was the City's decision. That's how they**  
 5 **decided how they wanted to gain a recharge**  
 6 **credit, no one is forcing them to gain recharge**  
 7 **credits.**  
 8 Q. But that aside, I mean, for the other users in  
 9 the aquifer, the water level is where it was  
 10 before the City did anything, and when the City  
 11 takes that physical recharge credit, it's going  
 12 to take water that was spoken for, correct, by  
 13 somebody's allocation?  
 14 **A. I think that would be true of any water right**  
 15 **holder that didn't pump their full water right;**  
 16 **they didn't get a credit for it so they couldn't**  
 17 **pump it.**  
 18 Q. So in the -- in the -- on the issue of the cap,  
 19 I think Counsel alluded to maybe the change that  
 20 should be made in the permits is just adding  
 21 some cap on use of credits to the existing  
 22 physical recharge credits. I'm -- I'm not sure  
 23 if I understood that line of questioning  
 24 completely. But I'm asking you, Mr. Boese, does  
 25 the -- does the District understand that the

1 City's not offering a cap if the AMCs are not  
 2 approved?  
 3 **A. Yes, I think Counsel's question was should there**  
 4 **be a cap on physical recharge credits, and I --**  
 5 **my comment was, yeah, that was something that**  
 6 **could be considered. I mean, I think there's**  
 7 **a -- there is a -- there's not a regulatory cap**  
 8 **or a permit condition on a cap of physical**  
 9 **recharge credits, it's quite evident that the**  
 10 **City is not going to be able to gain 120,000**  
 11 **acre-feet of physical recharge credits at their**  
 12 **current practice. I mean, we've gone for over**  
 13 **ten years and we're not even at 1,000 acre-feet**  
 14 **credit per year during that operation. So I --**  
 15 **I can't believe that the City would ever be able**  
 16 **to gain 120,000 acre-feet of physical recharge**  
 17 **credits with their current infrastructure and**  
 18 **system. It would be pretty difficult.**  
 19 Q. But you haven't looked at how that might or  
 20 might not work if the City reduced the aquifer  
 21 to the 1998 levels, have you?  
 22 **A. I have not, although the -- you know, the water**  
 23 **levels were lower during the early stages of**  
 24 **Phase I and Phase II, and we haven't seen a huge**  
 25 **number of recharge credits be accumulated to**

1 **date.**  
 2 Q. Mr. Boese, because your expert report reaches  
 3 conclusions concerning taking specifically, I  
 4 think you suggest that because all the water in  
 5 the aquifer is spoken for in these  
 6 over-appropriated areas, if the AMCs were  
 7 approved that that would be a taking. And my  
 8 first question for you concerning that,  
 9 Mr. Boese, have you taken any courses on  
 10 takings?  
 11 **A. No.**  
 12 Q. What are the elements to establish a compensable  
 13 taking?  
 14 **A. Are you asking me legal questions?**  
 15 Q. I am.  
 16 **MR. STUCKY:** Yeah, I'm going to --  
 17 well, I'm going to object as calling for a  
 18 legal conclusion on something outside the  
 19 statutes and regulations germane to water  
 20 rights and water law. But notwithstanding  
 21 that objection, I mean, I'm -- if my  
 22 witness wants to try and answer this,  
 23 I'm -- I'm fine with him attempting to  
 24 answer so ...  
 25 **MR. MCLEOD:** And I point out again,

1 Madam Hearing Officer, that the witness has  
 2 stated in his report that allowing AMCs in  
 3 these over-appropriated areas would be a  
 4 taking. It's a legal opinion that he's  
 5 given, and you know that the City objected  
 6 to witnesses being able to testify to their  
 7 legal arguments, but we have allowed that  
 8 all along the way. And now that he has put  
 9 that opinion of record, I don't see how the  
 10 parties are not -- are not allowed to  
 11 cross-examine him about his basis and  
 12 qualifications to have formed that opinion.  
 13 **PRESIDING OFFICER:** I think since  
 14 there is reference to it in the expert  
 15 report that you may question him about how  
 16 he came to that conclusion.  
 17 **BY MR. MCLEOD:**  
 18 Q. And, Mr. Boese, if you know, what are the  
 19 elements to establish a compensable taking?  
 20 **A. I'm not an attorney, so I'm going to decline to**  
 21 **answer that, I don't know the specifics.**  
 22 Q. Can you tell us what's the controlling source of  
 23 law under which taking analyses are conducted?  
 24 **A. Again, I'm not an attorney, so I'm going to**  
 25 **decline to answer that question.**

1 Q. Do you know if there's a rule against takings?  
 2 **A. A rule in what regard?**  
 3 Q. Is -- is there a legal rule, a statute, a  
 4 regulation --  
 5 **A. Are you talking about the Water Appropriation**  
 6 **Act?**  
 7 Q. Anywhere, any legal rule that you're aware of  
 8 that prohibits a taking?  
 9 **MR. STUCKY:** And I'm going to just  
 10 for the record, just to be clear in his  
 11 expert report, what his expert report says,  
 12 I think, is significant here. He refers to  
 13 a taking, and there, indeed, is -- he has  
 14 testified there's a taking of people's  
 15 water within the aquifer, but he doesn't  
 16 state a legal taking as protected by the  
 17 United States Constitution or the Tenth  
 18 Central case adopted by -- by the United  
 19 States Supreme Court. He doesn't  
 20 specifically refer to any of that. He's  
 21 talking about a taking of water, so I'm  
 22 not -- if we could direct this witness to  
 23 the specific part of his expert report and  
 24 ensure that that's the distinction that's  
 25 being drawn there, I'd appreciate that.

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1 **PRESIDING OFFICER:** Well, that's  
 2 actually where I was trying to go was I  
 3 think it would be helpful for the witness  
 4 to explain what he meant when he wrote that  
 5 in his expert report.  
 6 **MR. MCLEOD:** So if the witness is  
 7 willing to stipulate what his counsel just  
 8 said that he doesn't mean to indicate that  
 9 there's a taking in any legal sense, no  
 10 constitutional taking and no taking within  
 11 any of the concepts of the Tenth Central  
 12 case, we would take that stipulation and I  
 13 think that will do.  
 14 **MR. STUCKY:** We're not stipulating  
 15 that there's not a legal taking, we've  
 16 briefed that issue and we've argued that  
 17 issue. What I'm saying is that this  
 18 particular witness I'm not sure was opining  
 19 one way or the other as to whether or not a  
 20 Tenth Central legal taking occurred.  
 21 That's what I'm saying. Neither  
 22 affirmative or -- or against that  
 23 particular issue, that's -- perhaps I need  
 24 to be directed in this expert report so I  
 25 can better answer what -- where Mr. McLeod

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1 is referring.  
 2 **PRESIDING OFFICER:** Again -- oh,  
 3 Mr. Oleen.  
 4 **MR. OLEEN:** I'll just let you speak  
 5 first, Madam Hearing Officer.  
 6 **PRESIDING OFFICER:** I think it would  
 7 be helpful for the witness to explain what  
 8 he meant when he used the word take or  
 9 taking as you're referring to in his expert  
 10 report. So, Mr. Boese --  
 11 **A. I'm --**  
 12 **PRESIDING OFFICER:** -- let me know  
 13 when you find it.  
 14 **A. Well, thank you. Maybe Mr. McLeod could -- I**  
 15 **found it, it's on the bottom of page 8. Now**  
 16 **that I've read it, I think I can answer**  
 17 **Mr. McLeod's question if --**  
 18 **PRESIDING OFFICER:** Yes, just what  
 19 did you mean --  
 20 **A. Yeah.**  
 21 **PRESIDING OFFICER:** -- when you  
 22 wrote that, what does that mean in your  
 23 expert report?  
 24 **A. Thank you, I'm going to go ahead and read it, I**  
 25 **think for clarification, at least part of it. I**

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1 **said, AMCs would not only further appropriate**  
 2 **the source of supply in the City's Equus Beds**  
 3 **Aquifer well field area but would also be a**  
 4 **takings of the prior water right holders in the**  
 5 **area as their source of supply would be**  
 6 **appropriated by another junior water right. In**  
 7 **that sense, I meant that the senior water right**  
 8 **holders, anything that is senior to the ASR**  
 9 **Phase II application, or AMCs, has a water**  
 10 **right, has a property right, and that water**  
 11 **right has specific quantity, rate, place of use.**  
 12 **If we appropriated water that was already**  
 13 **dedicated to that user, that would take from**  
 14 **their source of supply.**  
 15 **BY MR. MCLEOD:**  
 16 **Q. Do we -- do we not do that every time that we**  
 17 **allow a junior permit?**  
 18 **A. That's why we have a safe yield so that that --**  
 19 **so that we are not taking -- safe yield only**  
 20 **allows for water that's already -- to be**  
 21 **appropriated that's not already dedicated to**  
 22 **somebody else. That is specifically why we have**  
 23 **a safe yield regulation, why we don't allow**  
 24 **permits if we're fully appropriated and all the**  
 25 **water is already dedicated to other users,**

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1 **that's exactly why we have a safe yield.**  
 2 **Q. The instance that you posit in your report,**  
 3 **Mr. Boese, if there's a senior right holder and**  
 4 **then somebody else comes along and diverts water**  
 5 **that's spoken for by that senior rights holder,**  
 6 **who's doing the taking?**  
 7 **A. Can you rephrase that, you lost me just a little**  
 8 **bit there?**  
 9 **Q. So you were positing a scenario where there's a**  
 10 **senior rights holder and then somebody else**  
 11 **comes along, gets an appropriation and diverts**  
 12 **water that's already spoken for by that senior**  
 13 **rights holder, who's doing the taking?**  
 14 **A. Well, we wouldn't allow a new permit if the area**  
 15 **is already fully appropriated, it's already**  
 16 **dedicated, so your scenario is impossible for me**  
 17 **to answer. Under the AMC proposal, that's**  
 18 **exactly what would happen.**  
 19 **Q. Under -- under your understanding, then, of the**  
 20 **AMC scenario who's doing the taking?**  
 21 **A. If an AMC was allowed?**  
 22 **Q. Yes.**  
 23 **A. The City of Wichita would be -- water would be**  
 24 **appropriated that's already dedicated to**  
 25 **somebody else. Is that --**

1 Q. And you've indicated that a lot of these areas  
 2 are over-appropriated now -- over-appropriated  
 3 now, so if a junior rights holder in those areas  
 4 that are over-appropriated now diverts water  
 5 that's spoken for by a senior rights holder,  
 6 that could happen, couldn't it, Mr. Boese?  
 7 **A. Those were allowed before safe yield regulation**  
 8 **so that water is dedicated to them, just as it**  
 9 **is a senior water rights. If there's an**  
 10 **impairment, then there would be an impairment**  
 11 **complaint. Could be an -- could be an**  
 12 **impairment complaint submitted to the chief**  
 13 **engineer and it would be evaluated.**  
 14 Q. Apart from -- apart from the issue of impairment  
 15 complaints and proceedings, is that use by the  
 16 junior water rights holder of water spoken for  
 17 by the senior rights holder in the  
 18 over-appropriated area a taking by that junior  
 19 rights holder?  
 20 **A. No, because there wasn't a safe yield**  
 21 **regulation -- that water is now dedicated for**  
 22 **that junior water right holder. As long as the**  
 23 **senior water right holder is being satisfied,**  
 24 **then, no, there is not a taking because the --**  
 25 **unless the senior water right is not being**

1 **satisfied and files an impairment complaint.**  
 2 Q. What if the senior right is not being satisfied?  
 3 **A. Then they can file an impairment complaint and**  
 4 **it can be determined by the Division of Water**  
 5 **Resources, in coordination with the GMD as**  
 6 **appropriate.**  
 7 Q. In that instance, though, is there also a  
 8 taking?  
 9 **A. A taking of the water -- senior water rights**  
 10 **supply. I'm not sure we're taking about a**  
 11 **taking of the supply. Yeah, there would be a**  
 12 **taking if the impairment was substantiated.**  
 13 Q. And in your view, would that taking be by the  
 14 junior rights holder?  
 15 **A. Again, the taking of the supply in an**  
 16 **impairment, if it was substantiated, yes, then**  
 17 **Division of Water Resources or the District,**  
 18 **depending on what scenario we're talking about,**  
 19 **would then search to find a remedy to satisfy**  
 20 **the senior water right holder.**  
 21 Q. Okay. And just to clean this up and maybe sew  
 22 it up, Mr. Boese, and in line with your  
 23 Counsel's statement, if I understand what you're  
 24 saying, you're testifying in your expert report  
 25 that approval of an AMC could result in a taking

1 of a senior rights holder supply, but you are  
 2 not testifying to the District's legal argument  
 3 that there's a constitutional taking here?  
 4 **A. I think our legal counsel has already briefed**  
 5 **that and will brief it further. I'm talking**  
 6 **about a taking of that water right holder's**  
 7 **property rights supply. And I think I say that**  
 8 **with the comment as their source of supply would**  
 9 **be appropriated by another junior water right.**  
 10 Q. And so just as a yes-or-no question, Mr. Boese,  
 11 you're -- you're not testifying that the legal  
 12 argument briefed by your counsel is correct as  
 13 it relates to takings, correct?  
 14 **A. Pardon? I didn't understand your question.**  
 15 Q. You're not testifying that the legal arguments  
 16 that have been briefed by your counsel as they  
 17 relate to takings are correct arguments, are  
 18 you?  
 19 **A. I'm -- you've completely lost me, Mr. McLeod,**  
 20 **can -- I'm not argue -- are you -- are you**  
 21 **asking me about my --**  
 22 **MR. STUCKY: I'll object to**  
 23 **relevance.**  
 24 **PRESIDING OFFICER: I think what I'm**  
 25 **hearing is he's not testifying either way.**

1 He's explaining what he said. I'm not  
 2 hearing him say anything about whether  
 3 legal arguments from his counsel are  
 4 correct or not.  
 5 **MR. MCLEOD: And that's what I'm**  
 6 **hearing too, and I'm trying to get a yes or**  
 7 **no on that, though, just to be absolutely**  
 8 **certain in the record.**  
 9 **PRESIDING OFFICER: Well, but you're**  
 10 **asking from one side, not is it neutral.**  
 11 **MR. MCLEOD: I can ask it this way.**  
 12 **BY MR. MCLEOD:**  
 13 Q. Mr. Boese, do you have foundational expertise to  
 14 form an opinion either way on whether your  
 15 counsel's legal argument concerning takings as  
 16 they briefed it in this case is correct?  
 17 **A. Without having that legal brief in front of me,**  
 18 **I -- I mean, if -- do you want to provide me**  
 19 **with that legal brief, I don't have it in front**  
 20 **of me?**  
 21 Q. Let me ask it the way I think the hearing  
 22 officer suggested, you're not testifying either  
 23 way as to whether your counsel's legal argument  
 24 on takings is correct, are you?  
 25 **MR. STUCKY: I'll just make it**

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1 simple, I'll just stipulate for the record  
 2 that this witness is not taking a position  
 3 one way or another right now on whether or  
 4 not our legal arguments with respect to  
 5 takings are correct.  
 6 **A. I'll -- I'll agree with that, I think -- thank**  
 7 **you, Mr. -- yeah, I'll agree with that, I'm --**  
 8 **I'm not forming an opinion on the -- on the**  
 9 **District's -- on the legal brief at this time.**  
 10 **I was referring to the takings of a water right**  
 11 **holder's supply, which obviously may be a part**  
 12 **of Mr. Stucky's legal brief.**  
 13 **PRESIDING OFFICER:** I just saw the  
 14 pizza walk in.  
 15 **MR. ADRIAN:** Did you get that?  
 16 **PRESIDING OFFICER:** I think this  
 17 might be -- it's on the record. I think  
 18 this might be a good time for a short  
 19 break, and we had discussed, what,  
 20 15 minutes? So let's do that.  
 21 (Thereupon, a lunch recess was  
 22 taken; whereupon the following was  
 23 had.)  
 24 **PRESIDING OFFICER:** It is now 12:15,  
 25 12:16, and we are back on the record.

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1 Mr. Stucky.  
 2 **MR. STUCKY:** Madam Hearing Officer,  
 3 at this time, I would like to call  
 4 Mr. Romero to the stand.  
 5 **PRESIDING OFFICER:** Oh, and I'll  
 6 make a note for the record that we are  
 7 taking Mr. Romero out of sequence due to  
 8 his travel plans so we're not necessarily  
 9 finished with Mr. Boese.  
 10 **MR. STUCKY:** And while Mr. Romero is  
 11 approaching the stand, Madam Hearing  
 12 Officer, to clean up the record and provide  
 13 a clear record, I'm prepared to argue the  
 14 importance -- the import of titles as it  
 15 relates to statutory construction, I'm  
 16 ready to cite United States Supreme Court  
 17 cases, Kansas Supreme Court cases, and  
 18 Kansas Court of Appeals cases on that  
 19 subject. If I may, we're prepared to argue  
 20 that issue.  
 21 **PRESIDING OFFICER:** Perhaps we  
 22 should do that at a time when Mr. Romero is  
 23 not available to us. Let's handle that  
 24 after being able --  
 25 **MR. STUCKY:** Okay.

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1 **PRESIDING OFFICER:** -- we've covered  
 2 him since he's on a time constriction, is  
 3 that okay?  
 4 **MR. STUCKY:** Yes, that's perfect.  
 5  
 6 DAVE MARK ROMERO,  
 7 having been first duly sworn, was  
 8 examined and testified as follows:  
 9  
 10 **DIRECT EXAMINATION**  
 11 **BY MR. STUCKY:**  
 12 Q. Mr. Romero, please state your full name.  
 13 **A. My name is Dave Mark Romero.**  
 14 Q. And what is it you currently do?  
 15 **A. I'm a consultant, I'm the president of the firm**  
 16 **Balleau Groundwater, Incorporated; we're in**  
 17 **Albuquerque, New Mexico is where our office is.**  
 18 **I consult on water availability, I consult on**  
 19 **aquifer testing, specifications of wells. I do**  
 20 **a lot of analysis involving applications for**  
 21 **changes in water use and lots of technical**  
 22 **analysis done that way.**  
 23 Q. What is Balleau? I assume that's not a  
 24 character from The Jungle Book?  
 25 **A. No, it's the name of the firm founder. Peter**

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1 **Balleau is the -- the founder of our firm, which**  
 2 **started in, oh, 1992, I believe.**  
 3 Q. And you're currently the president of Balleau?  
 4 **A. I am.**  
 5 Q. How long have you been the president of Balleau?  
 6 **A. I think since 2012.**  
 7 Q. Mr. Romero, I would ask that you turn to  
 8 Exhibit 68 in the notebooks before you.  
 9 **A. Okay, I'm there.**  
 10 Q. Mr. Romero, there's an expert report included as  
 11 shown on 68 in our exhibit notebook. Could you  
 12 turn with me to the page 14 out of 16 in this  
 13 expert report?  
 14 **A. I'm there.**  
 15 Q. Is that your signature on that page?  
 16 **A. It is.**  
 17 Q. And does this expert report contain a true and  
 18 accurate representation of your opinions as  
 19 they're going to come out in your testimony  
 20 today?  
 21 **A. It does.**  
 22 **MR. STUCKY:** I would move to just go  
 23 ahead and admit his expert report as  
 24 Exhibit 68. We will be referring to it  
 25 throughout his testimony.

1 **PRESIDING OFFICER:** Any objection?  
2 **MR. MCLEOD:** I just make the same  
3 objection about cumulative.  
4 **PRESIDING OFFICER:** Exhibit 68 will  
5 be admitted.  
6 **BY MR. STUCKY:**  
7 Q. Mr. Romero, on page 69 of your expert report,  
8 there's a couple graphs or maps that are  
9 referenced, that are included there; is that  
10 right?  
11 **A. Which page, you said 69?**  
12 Q. I'm sorry, Exhibit 69.  
13 **A. Yes, Exhibit 69 is a map and two charts with**  
14 **streamflow.**  
15 Q. Were those also created by you in preparation  
16 for your testimony today?  
17 **A. They were.**  
18 Q. And will you also be referencing those at some  
19 point in your testimony?  
20 **A. I will. And one thing I'd like to point out**  
21 **about the two figures. There are actually three**  
22 **pages in the exhibit, the first page is a map,**  
23 **the second and third pages are charts. And the**  
24 **charts were converted from Excel into an Adobe**  
25 **Acrobat file, and when that happened, sort of a**

1 the back of every expert report.  
2 **BY MR. STUCKY:**  
3 Q. And if you could -- have you flipped in your  
4 expert report to your CV or resume, Mr. Romero?  
5 **A. Yes.**  
6 Q. Okay. Now, I understand, Mr. Romero, that  
7 likely you've worked on additional projects and  
8 done additional things since this resume was  
9 furnished, and I understand that although a  
10 very, very, very detailed resume, it may not be  
11 exhaustive. But does it -- with those  
12 qualifications, does it represent a true and  
13 accurate depiction of things that you've done,  
14 your education, your titles, and in essence,  
15 your resume?  
16 **A. It does. There's a conference that I spoke at**  
17 **last October, and that's not in here, but that**  
18 **really doesn't change what you just described.**  
19 Q. And, Mr. Romero, tell me, what is your  
20 education, what educational background do you  
21 have to provide you with credentials to be here  
22 today?  
23 **A. I have a bachelor of science in mathematics,**  
24 **that's from the University of New Mexico, I got**  
25 **that in 1992; I have a master in science --**

1 ghost line got written into the -- written into  
2 the chart that only shows up when you print, and  
3 it only happened sometimes.  
4 **So I just want to clarify on the chart, the**  
5 **chart has a gray line which is streamflow, then**  
6 **it has a blue line which moves from roughly --**  
7 **there's a blue line that's a perfectly straight**  
8 **line, and that straight line is actually a typo**  
9 **that just shows up when you print the file. So**  
10 **the perfectly straight blue line that is on both**  
11 **charts should just be ignored.**  
12 Q. Mr. Romero, you indicated you created these  
13 documents, I would ask that these documents also  
14 be admitted as the District's Exhibit 69.  
15 **PRESIDING OFFICER:** Any objection?  
16 69 will be admitted.  
17 **BY MR. STUCKY:**  
18 Q. Mr. Romero, you had furnished a detailed CV or  
19 resume at some point; is that correct?  
20 **A. That is.**  
21 **MR. STUCKY:** And, in fact, I think  
22 all counsel has a copy of that CV, is that  
23 right, just to be clear? It was -- it was  
24 furnished previously, just want to make  
25 sure everyone has it? I believe it's in

1 **master of science in hydrology from the**  
2 **University of Arizona, and I obtained that in**  
3 **1996.**  
4 Q. What current licenses or certifications do you  
5 have, Mr. Romero?  
6 **A. I have a certification with the American**  
7 **Institute of Hydrology.**  
8 Q. You indicated a moment ago that you're currently  
9 the president of Balleau; is that -- is that  
10 right?  
11 **A. Yes.**  
12 Q. And that would be Balleau Groundwater,  
13 Incorporated?  
14 **A. Yes.**  
15 Q. Prior to that, it indicates in your resume that  
16 for sometime, it looks like about nine years,  
17 you were the vice-president and the hydrologist  
18 at Balleau; is that right?  
19 **A. Yes.**  
20 Q. And prior to that, you were the senior  
21 hydrologist at Balleau, tell me what it means to  
22 be a senior hydrologist.  
23 **A. A senior hydrologist takes on more**  
24 **responsibility than a person who's at an**  
25 **introductory level in terms of managing**

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1 **projects, time lines, and some general**  
 2 **coordination with clients.**  
 3 Q. Tell me -- so a hydrologist, which has perhaps  
 4 less duties than a senior hydrologist, what kind  
 5 of duties would a senior hydrologist and/or a  
 6 hydrologist perform?  
 7 **A. A lot of obtaining data from public sources that**  
 8 **relates to wells, water levels, precipitation**  
 9 **data, geologic information, taking that**  
 10 **information and building it into a mapping**  
 11 **framework so that you could analyze things**  
 12 **geographically and organize information so that**  
 13 **we can assess water supply in areas, assess how**  
 14 **much water is moving through areas. A lot of**  
 15 **our work involves development of models and just**  
 16 **organizing the information that formulates the**  
 17 **technical basis for -- for models and opinions**  
 18 **that require some analysis.**  
 19 Q. You just mentioned models, how many models do  
 20 you believe that you've worked on or dissected  
 21 in some fashion?  
 22 **A. Over 100. I'd say that probably about a third**  
 23 **of the models that we've worked with have been**  
 24 **models that we developed ourselves.**  
 25 Q. Okay. So there was testimony from a witness

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1 from the City of Wichita earlier that indicated  
 2 that most hydrologists in their career may  
 3 actually just help with one or two -- help  
 4 construct one or two models in their career  
 5 because that's a pretty unique duty, but your  
 6 testimony is that you've helped actually write  
 7 or develop more than 30 models?  
 8 **A. Yes. Yeah, it's -- it is somewhat of a**  
 9 **specialized type of thing, yeah.**  
 10 Q. And so in actually writing or developing models,  
 11 I assume that gives you a special insight into  
 12 how a model works in the sense of not only what  
 13 model inputs are and model outputs but also, if  
 14 you will, the guts of how the model actually  
 15 operates; is that -- is that right?  
 16 **A. Sure.**  
 17 Q. Now, in your resume, it indicates -- it  
 18 indicates that you worked on a number of  
 19 important projects germane to water rights. Can  
 20 you highlight just a few of those important  
 21 projects that relate to actual groundwater  
 22 modeling?  
 23 **A. Sure. The -- actually, the first job listed on**  
 24 **page 3 of my resume in southeastern Arizona,**  
 25 **that's a job that I was working on, it**

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1 **involved -- a federal reserve water right was**  
 2 **being considered, and I was retained to analyze**  
 3 **some elements of the water right.**  
 4 **In that particular case, it involved a**  
 5 **river, and there was concern about habitat in**  
 6 **the river. And some augmentation wells were**  
 7 **part of the -- part of the water right that**  
 8 **could be used temporarily to augment flow in the**  
 9 **stream to maintain flows for habitat, so that**  
 10 **was related to analyzing effects of groundwater**  
 11 **pumping and augmentation flow in a setting for a**  
 12 **federal reserve water right for a national**  
 13 **conservation area.**  
 14 **I often in New Mexico am retained to**  
 15 **evaluate the hydrologic effects of applications**  
 16 **for water rights transfers for a change in place**  
 17 **of use. In -- in New Mexico actually, the state**  
 18 **engineer office has adopted two models that my**  
 19 **office developed for administration of water**  
 20 **rights. And so I -- I often have jobs in the**  
 21 **background where I am doing those kinds of**  
 22 **analyses.**  
 23 Q. I see one in southern California, the very next  
 24 one mentioned, the one with regard to source  
 25 water, an assessment in west Texas I see in

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1 here. There's a -- would you agree with me  
 2 there's a whole bunch of examples in varying  
 3 states where you've done groundwater modeling  
 4 and tried to determine what the impacts would be  
 5 from pumping or uses of source water or whatever  
 6 the project may be?  
 7 **A. Yes. The one you mentioned in west Texas was**  
 8 **actually -- I was working for an oil and gas**  
 9 **company that was interested in source water**  
 10 **availability from a particular aquifer that they**  
 11 **were developing because they were using that**  
 12 **water for hydraulic fracturing, and they were**  
 13 **considering how much water -- how many wells**  
 14 **they would drill and how much water they would**  
 15 **pump from the well as an alternative to**  
 16 **purchasing some water from a city for the same**  
 17 **use. So I was evaluating how -- the potential**  
 18 **for water that could be produced from the**  
 19 **aquifer to help them -- to help guide their**  
 20 **decisions.**  
 21 Q. Mr. Romero, are you familiar with the model that  
 22 was used by the City of Wichita in their  
 23 proposal to predict effects on the aquifer  
 24 during an eight-year drought?  
 25 **A. I am familiar with it, it's a MODFLOW-based**



1 **model, and it's based on a model that was**  
 2 **developed by the U.S. Geological Survey.**  
 3 Q. Let me ask you this: Were you ever asked to  
 4 dissect and apply that model in another context  
 5 in the State of Kansas other than this case?  
 6 **A. The MODFLOW model?**  
 7 Q. Yes.  
 8 **A. Yes. My office developed a model in the area of**  
 9 **Groundwater Management District No. 5, it's a**  
 10 **pretty expansive model, it runs from -- from**  
 11 **about the area -- it runs along the Arkansas**  
 12 **from just east of the area of Quivira National**  
 13 **Wildlife Refuge all the way west to about Dodge**  
 14 **City, and it's a model that we developed to**  
 15 **analyze hydrologic effects from pumping. We**  
 16 **developed it a little over ten years ago, and**  
 17 **since that time, the chief engineer of Kansas,**  
 18 **Mr. David Barfield, has used that model to**  
 19 **evaluate an impairment claim that was filed by**  
 20 **the U.S. Fish & Wildlife Service at Quivira**  
 21 **National Wildlife Refuge. So that model's**  
 22 **been -- provided some technical foundation for**  
 23 **an impairment investigation.**  
 24 Q. So this variation of the MODFLOW model that you  
 25 helped write has been one that's actually been

1 Q. Have you ever taken the opportunity to conduct  
 2 peer review on -- on other modelers' work?  
 3 **A. I have. I'd say most of the peer -- peer review**  
 4 **work that I've done has been based in southern**  
 5 **California in the Upper Santa Ana River**  
 6 **Watershed. There's a model in a basin that's**  
 7 **known as the Bunker Hill Basin, and I was**  
 8 **retained years ago to do some peer review of a**  
 9 **model that was developed in that area. The**  
 10 **model was used for -- for water planning.**  
 11 In southern California, there are some  
 12 aqueducts that pull water from the northern part  
 13 of the state and they bring water into parts of  
 14 southern California and recharge the aquifer,  
 15 and the model is used for those types of  
 16 analyses of water planning. That particular  
 17 model also had a subsidence component built into  
 18 it because it's an area where there was a lot of  
 19 groundwater pumping and some water levels would  
 20 subside and affect infrastructure of buildings,  
 21 things like that.  
 22 Q. And I'll pause you for a moment, I'm guessing  
 23 you could probably talk all day about all the  
 24 additional work you've done and performed in  
 25 peer reviews and other modeling, but would it

1 utilized by the chief engineer -- chief engineer  
 2 of the Division of Water Resources to perform  
 3 modeling?  
 4 **A. Yes.**  
 5 Q. And I look at your resume -- well, Mr. Romero,  
 6 you live in New Mexico; is that right?  
 7 **A. I do.**  
 8 Q. And does it suffice to say that despite the fact  
 9 you live in New Mexico, you've done groundwater  
 10 modeling work all over the United States?  
 11 **A. I have.**  
 12 Q. And narrowing in --  
 13 **A. Mostly central to western, but yes.**  
 14 Q. But narrowing in on Kansas, this isn't your  
 15 first time that you've examined a MODFLOW model  
 16 for a major project in Kansas. Is that a true  
 17 statement?  
 18 **A. That's true.**  
 19 Q. And, in fact, you were actually asked to write a  
 20 model for GMD 5 that's been relied on; is that  
 21 true?  
 22 **A. Yes.**  
 23 Q. Are you familiar with the concept of -- of peer  
 24 review and what that means?  
 25 **A. I am.**

1 suffice to say that you have peer reviewed a  
 2 number of other modelers' work in the past?  
 3 **A. I have.**  
 4 Q. I want to jump back just for a moment to your  
 5 work history. We talked about your work as a  
 6 hydrologist a little bit, we talked about the  
 7 fact that you're now the president of this  
 8 company that you work for. Prior to that, it  
 9 indicates that you were a research assistant at  
 10 the University of Arizona. Tell me what that  
 11 entailed.  
 12 **A. That -- that involved -- it was actually some**  
 13 **modeling work that was related to MODFLOW. The**  
 14 **research project that I was working on, I**  
 15 **actually found that MODFLOW was a model that**  
 16 **could be used to simulate grids that had a more**  
 17 **complicated structure than ones people typically**  
 18 **use. People would use grids that were**  
 19 **rectangular in nature, and I found that you**  
 20 **could make a minor adjustment to the model and**  
 21 **you could change your grids to have different**  
 22 **shapes to fit certain areas where you want to**  
 23 **have more refinement in your grids. So it**  
 24 **was -- it was actually something that was**  
 25 **related to taking MODFLOW to another level of**

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1 **use.**  
 2 Q. So, Mr. Romero, as -- as early as 25 or more  
 3 years ago, you were already analyzing,  
 4 dissecting, and applying the MODFLOW model. Is  
 5 that a true statement?  
 6 **A. That is.**  
 7 Q. Tell me -- well, and let me ask you this: As  
 8 someone that's familiar with graduate programs  
 9 and things of that nature, was it an honor to be  
 10 asked to be a research assistant at the  
 11 University of Arizona?  
 12 **A. You would need to be accepted by a professor to**  
 13 **do that. There was something that was related**  
 14 **to that, though, that I would consider an honor.**  
 15 **I was invited to submit a paper to a special**  
 16 **edition of a professional journal, the journal's**  
 17 **called Groundwater, and I was invited to submit**  
 18 **a paper based on presenting that research. So I**  
 19 **presented that research at a conference, and**  
 20 **then they picked some people there to submit**  
 21 **papers to -- to an invited edition of the**  
 22 **journal. So that was -- that was a distinction.**  
 23 **And you turn it in and it doesn't just go in, it**  
 24 **has to be peer reviewed and accepted, and it was**  
 25 **accepted.**

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1 Q. So in other words, you've had peer reviewed and  
 2 published articles that were published in  
 3 leading journals on groundwater and things of  
 4 that nature?  
 5 **A. That was -- that was one article --**  
 6 Q. Uh-huh.  
 7 **A. -- in an invited journal. And it was at a time**  
 8 **when I was considering whether or not I would**  
 9 **pursue research or consulting. I stuck with**  
 10 **consulting and haven't really done many more**  
 11 **publications in peer review journals because I**  
 12 **write reports, consulting reports.**  
 13 Q. But at least at one point, you were published in  
 14 a major publication on groundwater, is that --  
 15 is that what this is?  
 16 **A. Yeah, a special edition of it, yeah.**  
 17 Q. And then I assume that being a staff research  
 18 assistant at -- well, you were a staff research  
 19 assistant, were you not?  
 20 **A. I was. That was -- while I was in school, I was**  
 21 **employed as a staff research assistant at**  
 22 **Los Alamos National Laboratory, and I was doing**  
 23 **geophysical work there. There was an interest**  
 24 **in plugging materials that would be used for**  
 25 **plugging certain pits in the ground where**

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1 **testing was done. It was material science,**  
 2 **geotechnical.**  
 3 Q. Was that national laboratory ever stormed by  
 4 anybody while you were there?  
 5 **A. It wasn't.**  
 6 Q. That was a joke. But I assume that you had to  
 7 have a special security clearance when you were  
 8 working at that laboratory; is that right?  
 9 **A. Yes, I had a -- I had a Q clearance at the time.**  
 10 Q. So you worked on groundwater modeling, and as it  
 11 relates to the MODFLOW model, you've developed,  
 12 you've written, you've dissected models for over  
 13 25 years; is that right?  
 14 **A. Yes.**  
 15 Q. And would you consider yourself an expert on the  
 16 MODFLOW model, having actually written models in  
 17 that regard?  
 18 **A. Yes.**  
 19 Q. I believe it's indicated that you are involved  
 20 in a number of professional societies, and I see  
 21 a list in your CV, and I'm not going to read  
 22 them for the record, but just in a nutshell, in  
 23 maybe 45 seconds or less, Mr. Romero, can you  
 24 sum up what some of these professional societies  
 25 entail and why they're important for your work?

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1 **A. They all have an interest in -- in groundwater**  
 2 **or hydrology in some sort of sense and moving**  
 3 **science forward to -- to help understand it**  
 4 **better.**  
 5 Q. Have you served as an officer or a president on  
 6 any of these associations?  
 7 **A. I have not.**  
 8 Q. Do any of these professional societies offer  
 9 special certifications or licenses that are  
 10 separate and apart from what you've already  
 11 mentioned?  
 12 **A. No.**  
 13 Q. Are there any, aside from those professional  
 14 societies listed, are there any committees or  
 15 boards that you currently serve on?  
 16 **A. Some technical advisory committees. I've been**  
 17 **on three different technical advisory committees**  
 18 **in southern California that were part of a peer**  
 19 **review -- part of a peer review committee, that**  
 20 **was related to peer review work. I'm on a**  
 21 **technical advisory committee right now in the**  
 22 **Lower Rio Grande that is involved with doing**  
 23 **some analysis on the Lower Rio Grande in a**  
 24 **settlement setting because there's some**  
 25 **litigation that's going on in that area.**

1 Q. Mr. Romero, you indicated that you've been  
2 published in a major journal on groundwater  
3 hydrology and modeling. I look in your -- in  
4 your resume and there's a whole list of  
5 publications and presentations that you've made  
6 on similar topics. Is that a true statement?  
7 **A. Yes.**  
8 Q. And I see, for example, a number of  
9 presentations, or publications as they are, that  
10 you made on MODFLOW. Is that a true statement?  
11 **A. Yes.**  
12 Q. Is this list intended to be an exhaustive list,  
13 or is it possible that you may have given other  
14 presentations or been published elsewhere that's  
15 not listed in this list?  
16 **A. Publications, no, but presentations, perhaps.**  
17 Q. So a number of professional organizations have  
18 asked you to present or write papers on the  
19 MODFLOW model, is that what this indicates to  
20 me?  
21 **A. Or on hydrologic analysis that oftentimes**  
22 **involves the MODFLOW model.**  
23 Q. So the answer, then, with that qualification, is  
24 yes?  
25 **A. Yes.**

1 these issues in an even deeper context?  
2 **A. Yes.**  
3 Q. So in other words, you -- and we'll talk about  
4 it in a moment, but in other words, you did some  
5 work and some research and some expansions of  
6 the application of the City's MODFLOW model  
7 that's -- that's greater than the work that was  
8 actually done by the modelers with the City. Is  
9 that a true statement?  
10 **A. Some of the analysis was taken to a further**  
11 **extent, yes.**  
12 Q. I assume that as you were looking at the  
13 modeling of the City that you also looked at the  
14 inputs and the outputs that the City relied upon  
15 in their modeling?  
16 **A. I did.**  
17 Q. And since I'm not a modeler, explain to me what  
18 the guts are of a model, what kind of -- if  
19 you're first looking at a model, what kind of  
20 things would you look at as you're trying to  
21 understand a model and trying to dissect it?  
22 **A. Excuse me. You get a -- basically, the files**  
23 **that were provided had a model work space, which**  
24 **is really just kind of a directory in a computer**  
25 **that has model input files. And the input files**

1 Q. You were hired to do analysis on the modeling  
2 performed by the City in this case; is that  
3 true?  
4 **A. That's true.**  
5 Q. And, in fact, you were retained by both Adrian &  
6 Pankratz and Wendling Law to help with that  
7 project; is that right?  
8 **A. Yes.**  
9 Q. Have you had an opportunity to read the proposal  
10 document that's included in Exhibit 1 of the  
11 City's exhibits?  
12 **A. I have. I didn't check that that's Exhibit 1**  
13 **but the proposal, yes.**  
14 Q. And, in fact, you've read the proposal and  
15 looked at the various attachments to the  
16 proposal. Is that a true statement?  
17 **A. I have.**  
18 Q. Have you also examined the MODFLOW modeling that  
19 was used as a -- for the development of the  
20 arguments in the proposal?  
21 **A. Yes.**  
22 Q. And, in fact, have you not only analyzed the  
23 City's MODFLOW model in its current form, but  
24 did you also do some of your own modifications  
25 to the MODFLOW model to try and understand all

1 **have information in them like how many model**  
2 **layers there are, parameters that make up the**  
3 **aquifer, hydraulic parameters that make up the**  
4 **aquifer, the time over which the model is run,**  
5 **specifications of pumping at particular wells.**  
6 **All that information is in digital files,**  
7 **that information is just read into a computer**  
8 **and it processes it and uses a groundwater flow**  
9 **equation to figure out how the system responds**  
10 **to pumping, for example. And then information**  
11 **is written to output files, and you examine the**  
12 **output files to see the modeled results.**  
13 Q. Let me just back up for a moment. As you  
14 examined the City's modeling and you performed  
15 your work, a lot of this modeling was -- the  
16 modeling work you did and the input files you  
17 relied on and worked upon, that was requested by  
18 the City at some point, is that right, to look  
19 at that?  
20 **A. Yes.**  
21 Q. Okay.  
22 **A. Yes.**  
23 Q. And, in fact, was there an exchange between you  
24 and Mr. McCormick where you furnished everything  
25 that you had looked at and relied upon in -- in

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1 formulating your opinions?  
 2 **A. There was, we had a conference call one morning**  
 3 **first week of December and we discussed the**  
 4 **files; and he had some questions, I answered**  
 5 **them, and I clarified the work that I did and**  
 6 **then followed up with the modeled files that I**  
 7 **had created.**  
 8 Q. And to the extent we, for some reason, get an  
 9 objection with respect to any foundation of your  
 10 testimony, you have a jump drive here that could  
 11 be furnished to become part of a very, very,  
 12 very extensive record to support your work. Is  
 13 that a true statement?  
 14 **A. Yes, it would be the same information that I**  
 15 **provided to Mr. McCormick.**  
 16 Q. But if we were to -- I mean, I understand that a  
 17 model isn't something that's conducive to just  
 18 simply printing off but -- correct?  
 19 **A. Yes, that's correct.**  
 20 Q. But -- and, in fact, the City hasn't made -- you  
 21 know, hasn't produced a computer with a model on  
 22 it as an exhibit, or anything of that nature  
 23 either, but if we were to print off all your  
 24 research, all your work, it would create a  
 25 pretty voluminous record. Is that a true

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1 statement?  
 2 **A. I think it would, yeah.**  
 3 Q. But in the event there's a question about  
 4 foundation, all that's available and we can go  
 5 ahead and introduce it all; is that true?  
 6 **A. Yes.**  
 7 Q. Now, through your modeling work, did you  
 8 evaluate the hydrologic effects to area wells?  
 9 **A. I did.**  
 10 Q. And we'll talk about that more in great detail  
 11 in a moment. But tell me, did you do any review  
 12 of the USGS-based analysis done by Burns &  
 13 McDonnell?  
 14 **A. I did, it's -- it's the MODFLOW portion of the**  
 15 **analysis that was done by Burns & McDonnell**  
 16 **that's described in the proposal.**  
 17 Q. Could you turn with me to Exhibit 46 in the  
 18 notebooks before you?  
 19 **A. I'm there.**  
 20 Q. This USGS-based analysis that was relied on by  
 21 Burns & McDonnell, is that shown in Exhibit 46?  
 22 **A. Yes.**  
 23 **MR. STUCKY:** I think it's already --  
 24 we've already moved to admit this, but to  
 25 the extent we haven't, I move to admit the

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1 District's 46.  
 2 **PRESIDING OFFICER:** And can you  
 3 describe that exhibit again? I'm not sure  
 4 I'm looking at the right one.  
 5 **BY MR. STUCKY:**  
 6 Q. Can you describe --  
 7 **PRESIDING OFFICER:** It's the USGS  
 8 report?  
 9 **MR. STUCKY:** Yes. I move to admit  
 10 the USGS report that's been relied upon in  
 11 this case as an exhibit, as the District's  
 12 46.  
 13 **PRESIDING OFFICER:** Any objections?  
 14 **MR. OLEEN:** No, I believe it was  
 15 already admitted.  
 16 **PRESIDING OFFICER:** 46 will be  
 17 admitted, perhaps it's a duplicate.  
 18 **BY MR. STUCKY:**  
 19 Q. You mentioned a moment ago that you analyzed  
 20 this USGS-based analysis; is that right?  
 21 **A. I did. When I -- when I received the model**  
 22 **files that Burns & McDonnell worked with that**  
 23 **they provided with -- along with the proposal, I**  
 24 **also sought to get the USGS model files. And I**  
 25 **took a look at them and compared them.**

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1 Q. So I assume you've read what's depicted in  
 2 Exhibit 46, probably on more than one occasion,  
 3 parts of it. Is that a true statement?  
 4 **A. Yes.**  
 5 Q. How did you first obtain the model files from  
 6 the City that were used by the City?  
 7 **A. They were provided to me by Wendling Law. It**  
 8 **was a set of files that looked like they'd been**  
 9 **prepared for release.**  
 10 Q. And was it your understanding that Ms. Wendling  
 11 with Wendling Law had asked for those model  
 12 files directly from the City to be furnished to  
 13 you?  
 14 **A. That was my understanding.**  
 15 Q. And, in fact, were those files in a format  
 16 provided by the City to GMD2 and the Intervenors  
 17 by Mr. Macey sometime in 2018?  
 18 **A. That's how they were described, yes.**  
 19 Q. The Burns & McDonnell analysis is based on the  
 20 USGS model, is it not?  
 21 **A. Yes.**  
 22 Q. And when you reviewed the modeling performed by  
 23 the City in that regard, did you find a  
 24 difference in the specifications when compared  
 25 to the USGS model?

1 **A. I did. That was something that -- that I found**  
2 **early on. Basically, I just want to clarify the**  
3 **situation is that the model is described in the**  
4 **proposal to be unchanged from the USGS model,**  
5 **and I did find a change in the model files that**  
6 **I received. The change relates to the way that**  
7 **model flows between model layers, and so I**  
8 **looked at that and I saw that that was a**  
9 **difference from the USGS model.**

10 **I then -- I then corrected that change and**  
11 **found -- and ran some analyses to see how much**  
12 **of a difference it would make, and I saw that in**  
13 **the City's 1 percent drought scenario, it made a**  
14 **difference on how water levels change on the**  
15 **order of a few feet or less, I'd say about**  
16 **3 feet or less.**

17 Q. Mr. Romero, could you turn to page 2 of your  
18 expert report? And, in fact, keep your expert  
19 report open in front of you, if you would. In  
20 your expert report on page 2, you indicate that  
21 based on these differences in the files that  
22 were provided to you and how they were altered  
23 from the original USGS files that there was a  
24 difference, you wrote, quote, that defines the  
25 proposed minimum index levels in both model

1 found that there wasn't much of a difference in  
2 the results, I went ahead and proceeded with my  
3 analysis using the models in the unaltered form.  
4 But I found that either way it really wouldn't  
5 affect my conclusions. So -- but I did operate  
6 the USGS model in its unaltered form, which was  
7 different from the files that I -- that I  
8 received from the City.

9 Q. And I assume when we talk about what makes a  
10 difference, if we're talking about a difference  
11 of a few feet or less in water levels and we're  
12 talking about a water table that's 1,000 feet  
13 above bedrock, a few feet or less really doesn't  
14 matter. Is that a true statement?

15 **A. It's a very small portion of the thickness**  
16 **you're describing.**

17 Q. Okay. But on the other hand, if we're talking  
18 about a water table that's -- that's, let's say,  
19 8 or 10 feet above bedrock, a few feet can make  
20 a difference. Is that a true statement?

21 **A. It's a larger percentage of the quantity.**

22 Q. Okay. So did you also take it upon yourself to  
23 contact Mr. McCormick and see if you could  
24 resolve this variance in what you found?

25 **A. I -- I did not.**

1 versions and found the change is in the order of  
2 a few feet or less, end quote. When you're --  
3 these feet that you're describing, what's that a  
4 reference to?

5 **A. That's a reference to the elevation of the**  
6 **minimum index level that the model solves for in**  
7 **the 1 percent drought scenario.**

8 Q. So based on what you found from the original  
9 input files of USGS versus what was furnished to  
10 you by the City, you found a difference in the  
11 water levels that made a difference in the water  
12 levels of a few feet or less?

13 **A. I did. But -- but I --**

14 Q. Now, tell me just for a moment, though, as we  
15 back up -- and we'll clarify this in a moment  
16 but let me just back up. Would you agree with  
17 me that in the City's proposal they indicate  
18 that the model files were unaltered from USGS?

19 **A. Yes.**

20 Q. Okay. Now, later you had the opportunity to --  
21 well, back up. You just testified that you took  
22 it upon yourself to go ahead and run the model  
23 with the unaltered data, is that what you  
24 testified to?

25 **A. I wrote that up in the report. I -- since I**

1 Q. Okay. Did Mr. McCormick then indicate to you at  
2 some point or in a supplemental report that  
3 there was no difference in the model files  
4 utilized by the City?

5 **A. Mr. McCormick wrote a supplemental report,**  
6 **supplemental expert report, and in that report,**  
7 **he described that he checked the point that I**  
8 **raised in my report and in there he indicated**  
9 **that the difference that I saw in the files that**  
10 **I received did not exist in the model files that**  
11 **he was working with. That -- I didn't follow up**  
12 **beyond that because I thought that it was**  
13 **probably a glitch.**

14 **In the proposal, Burns & McDonnell**  
15 **describes that they use a model interface called**  
16 **Groundwater Vistas. It's just a tool that is an**  
17 **interface to work with these models. These**  
18 **models can be difficult to work with and there**  
19 **are interfaces available where you can load the**  
20 **model up into the interface to work with it.**  
21 **And I have seen glitches occur with that -- with**  
22 **that modeling package before. So I suspected**  
23 **that when the models were put out by Burns &**  
24 **McDonnell for use that a glitch may have**  
25 **happened that made that difference occur.**

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1 Q. So as you're sitting here today, I believe that  
 2 you're stating that you're willing to give  
 3 deference to Burns & McDonnell and their  
 4 interpretation that these unaltered model files  
 5 were used, is that what you're saying?  
 6 **A. That's what I'm saying.**  
 7 Q. But as you're sitting here today, you don't know  
 8 conclusively whether or not Burns & McDonnell,  
 9 indeed, utilized the unaltered model files; is  
 10 that right?  
 11 **A. I have not verified it personally, no.**  
 12 Q. But either way, you've run the City's modeling  
 13 both with these altered model files, if you  
 14 will, and also with the unaltered model files;  
 15 is that right?  
 16 **A. Yes.**  
 17 Q. And, again, the only way this would most likely  
 18 really matter if there was an error of a few  
 19 feet or less is if the saturated thickness of  
 20 the aquifer, for example, was -- was less than  
 21 20 or 10 feet; is that true?  
 22 **A. It -- it would depend on the question,**  
 23 **particular question that you're examining, but**  
 24 **the case of, you know, a few feet within**  
 25 **10 feet, that's about 30 percent. A few feet**

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1 **within 1,000 feet, it's substantially smaller**  
 2 **and more in the negligible category.**  
 3 Q. So in other words, and I understand there's a  
 4 whole bunch of questions that could flow from  
 5 that, but if the saturated thickness is  
 6 something less than 20 feet, depending on what  
 7 it is you're analyzing, a few feet or less of  
 8 variance could matter; is that true?  
 9 **A. It could.**  
 10 Q. Did you analyze some work of Burns & McDonnell  
 11 with respect to some modeling that they  
 12 performed in Hays, Kansas?  
 13 **A. Yes, I was retained by GMD No. 5 to review an**  
 14 **analysis that Burns & McDonnell did that**  
 15 **involved a water transfer from within GMD 5**  
 16 **north to the City of Hays.**  
 17 Q. Did you discover any errors in the model files  
 18 that were relied upon by Burns & McDonnell in  
 19 that case?  
 20 **A. I did, I think it was the category of a glitch**  
 21 **like I described before.**  
 22 Q. And then did you coordinate then with Burns &  
 23 McDonnell to help them correct those errors?  
 24 **A. Not directly, but I coordinated with GMD No. 5,**  
 25 **and they coordinated with -- down the line**

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1 **and -- until it eventually got to Burns &**  
 2 **McDonnell.**  
 3 Q. Are you familiar with this concept of a  
 4 contingency as it exists in the City's proposal?  
 5 **A. I am.**  
 6 Q. Do you know from a hypertechnical sense how the  
 7 City came up with the contingencies of 10 feet  
 8 or more in their proposal?  
 9 **A. I do not know how, it's -- there's a description**  
 10 **of adding the discrepancy in the proposal, but**  
 11 **there's not a lot of detail described.**  
 12 Q. So as someone who has written more than 30  
 13 models and has dissected somewhere in the tune  
 14 of hundreds of models, you're unable to tell  
 15 from looking at the City's proposal, the model  
 16 files they sent, and the modeling they performed  
 17 how they came up with this contingency?  
 18 **A. There's a statement in the proposal that says**  
 19 **the contingency is added, I think it's related**  
 20 **to variation in droughts, but there's just not a**  
 21 **lot of detail in how it was derived.**  
 22 Q. So if I were to ask you is there a scientific  
 23 basis or a research-based rationale for the  
 24 City's proposed contingency, how would you  
 25 answer that question?

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1 **A. Can you repeat that, I'm sorry?**  
 2 Q. Well, I guess what I'm asking you is there is  
 3 not a specific analysis or scientific basis that  
 4 supports the contingencies listed by the City;  
 5 is that right?  
 6 **A. I didn't see any detail in the description, I**  
 7 **didn't see a lot of detail in the description,**  
 8 **but I'm not aware of how much thinking went**  
 9 **behind it, you know, how much work was done**  
 10 **behind putting it together.**  
 11 Q. Well, based on what was furnished to you by  
 12 looking at the proposal and all the data that  
 13 was given to you by the City, which you were  
 14 told is what we relied -- the City relied on,  
 15 did you see anything that allowed you to come up  
 16 with a scientific justification for these  
 17 contingencies?  
 18 **A. No.**  
 19 Q. Now, let's back up just for a moment. Assume  
 20 with me for a second, Mr. Romero, that, in fact,  
 21 there was a variance in the modeled files  
 22 between the original USGS ones and the ones  
 23 relied on by the City, assume with me that for a  
 24 moment, okay? If that resulted in a difference  
 25 of 2 -- 3 feet or less, would that essentially

1 add to the variance in these contingencies  
2 identified by the City?  
3 **A. Yes.**  
4 Q. So in other words -- and let me also back up. I  
5 think you were here in the part of the testimony  
6 where it was indicated that the Chief Engineer  
7 Barfield indicated that these contingencies are  
8 like a safety net, if you will. Do you recall  
9 that testimony?

10 **A. I heard that yesterday.**

11 Q. And if they're perceived as a safety net, is --  
12 and I'm trying to understand, you know, I took  
13 some courses in statistics, is that similar to a  
14 margin of error as you would look at it in  
15 statistics?

16 **A. It could be maybe a layman term that's similar,  
17 yeah.**

18 Q. So in other words, if there's a difference in  
19 these model files, it would add to these  
20 differences or the variance in the results; is  
21 that right?

22 **A. Yes.**

23 Q. Do you think that as you analyzed the City's  
24 data and the City's results that a lesser  
25 contingency, like in the -- to the tune of

1 **A. Did you say page 2-10?**

2 Q. That's right. 2-24, table 2-10. Tell me when  
3 you're there, Mr. Romero.

4 **A. I'm there.**

5 Q. Mr. Romero, let's look at, for example, index  
6 well 9. Can you tell me on index well 9, for  
7 example, what is the plus -- what is the  
8 difference that we're looking at as shown in  
9 those second two columns, what's the difference  
10 there?

11 **A. The difference between the second and third  
12 columns?**

13 Q. Yes, that's right. For index well 9?

14 **A. It's less than a foot.**

15 Q. Okay. Now, go over to the fifth column where  
16 there's a contingency that's noted that's been  
17 added. The contingency added there was 10 feet;  
18 is that right?

19 **A. Yes.**

20 Q. Is 10 feet greater than 20 percent of the  
21 difference shown in column two and three?

22 **A. It is.**

23 Q. So in other words, you talked about this  
24 tolerance of 20 percent for contingencies, would  
25 you agree as you scan through this table that

1 5 feet, might create some sort of more  
2 scientific or accurate contingency to propose?

3 **A. It would depend on what you were looking at  
4 if -- if I think about -- if I were adding a  
5 contingency to some model results that I was  
6 working with, if -- if I were interested in a  
7 contingency on a water level that was solved by  
8 the model, I would look at the model calibration  
9 and see how different observed and simulated  
10 heads are to see what sort of difference there  
11 is between what the model is showing in  
12 comparison to what's actually happening. And  
13 looking at those types of differences, you know,  
14 I'd be able to come up with a characterization  
15 of factor of safety. I think in most models  
16 that I've worked with, my comfort level after  
17 reviewing the models and understanding how they  
18 work has been on the order of plus or minus  
19 20-ish percent.**

20 Q. So, Mr. Romero, if you were to turn to page --  
21 to page 2-24 of the City's proposal in the black  
22 notebook and look at table 2-10. And to make  
23 this easy for you, Mr. Romero, I'd ask that as  
24 we proceed you keep the proposal document in  
25 front of you.

1 the contingencies added may be high based on  
2 what you're finding in this table as far as what  
3 your proposed tolerance was?  
4 **A. Well, those -- I mean, those are some tolerances  
5 that I've seen in other models that I just think  
6 a lot of models that I've looked at it's kind of  
7 played out that way. This is big -- this is  
8 bigger than that, yeah.**

9 Q. So -- so based on, at least, what your kind of  
10 general rule of thumb is with respect to what's  
11 appropriate in this contingency, if you will,  
12 would you at least agree with me that the  
13 contingencies proposed by the City here are  
14 higher than what you would normally accept in  
15 your work?

16 **A. It's higher than the 20 percent I described.  
17 I'm just cautious about what I normally accept;  
18 I mean, that's some -- that's something that  
19 I've seen. You know, there -- there are ways  
20 that you can actually characterize uncertainty,  
21 but it's very -- it takes a great deal of time  
22 and effort. You could run thousands of models  
23 and take averages and then actually create  
24 statistics, but I found that if you actually go  
25 that route, you oftentimes can circumvent having**

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1 **to do all that if you just go with a plus or**  
 2 **minus 20 percent.**  
 3 Q. Mr. Romero, I'm not really sure that's the heart  
 4 of your concerns with the City's modeling anyway  
 5 so let's move on.  
 6 You have heard the discussion of the City's  
 7 planning that involves consideration of a  
 8 1 percent drought and a drought with a 1 percent  
 9 exceedance probability; is that right?  
 10 **A. Yes.**  
 11 Q. Have you also looked at the technical basis for  
 12 the City's proposal to lower the minimum index  
 13 level in USGS-based model analysis of water  
 14 level change?  
 15 **A. I have.**  
 16 Q. Are you aware that the City and Burns &  
 17 McDonnell used the USGS-based model to examine  
 18 the change to the aquifer water levels based on  
 19 a 1 percent drought?  
 20 **A. Yes.**  
 21 Q. Are you also aware that their analysis indicates  
 22 that water levels in the basin storage area will  
 23 generally be lower -- will generally lower the  
 24 current minimum index level in the 1 percent  
 25 drought simulation?

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1 **A. You mean that in the 1 percent drought water**  
 2 **levels drop below the current minimum index**  
 3 **level?**  
 4 Q. Oh, I'm sorry, let me back up. Are you aware of  
 5 the part of their proposal that -- that allows  
 6 them to lower the minimum index level from the  
 7 1993 levels to a new lower level?  
 8 **A. Oh, yes, I'm aware of that. I -- I consider**  
 9 **that really to be the proposal, to -- to make**  
 10 **that change.**  
 11 Q. And are you also aware of their modeling that  
 12 indicates that during this 1 percent drought  
 13 simulation water levels would have the potential  
 14 to drop below the existing 1993 levels?  
 15 **A. I'm aware of that, yes.**  
 16 Q. Okay. In terms of the Burns & McDonnell model  
 17 analysis of a 1 percent drought, how is it  
 18 related to the minimum index level?  
 19 **A. The -- the City developed this simulation of the**  
 20 **1 percent drought, and with all the modeling and**  
 21 **analysis that was done, they came up with a**  
 22 **schedule of pumping during that drought; and you**  
 23 **run that pumping in the model, and it projects**  
 24 **that water levels get down -- in a lot of cells,**  
 25 **it lowers below the current minimum index level**

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1 **and some it's above, but it's right in the area**  
 2 **of the current minimum index level and exceeds**  
 3 **it at some cells. And --**  
 4 Q. Does the City analysis indicate that water level  
 5 drawdowns associated with a 1 percent drought  
 6 are comparable to the existing minimum index  
 7 level?  
 8 **A. Yes, they're comparable and so I think that is**  
 9 **the -- I think that's the technical basis for**  
 10 **the reasoning to want to lower the proposed**  
 11 **minimum index level.**  
 12 Q. And your proposal, in fact, indicates how many  
 13 cells will drop below the 1993 level; is that  
 14 right?  
 15 **A. The -- the proposal does indicate that, I**  
 16 **believe, yeah.**  
 17 Q. What does -- what does the proposal indicate in  
 18 that regard?  
 19 **A. That -- just that there are a number of cells**  
 20 **where the model solves for a water level that is**  
 21 **at a lower elevation than the current minimum**  
 22 **index level.**  
 23 Q. Based on the City's model analysis, are you  
 24 aware of this argument that it triggers  
 25 conditions preventing the diversion of ASR

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1 recharge credits below that 1998 level?  
 2 **A. I'm aware of that, yeah.**  
 3 Q. Is that what, in part, from the City's  
 4 standpoint, implies the technical basis for the  
 5 proposal to revise the minimum index levels?  
 6 **A. Yes. As I understand it, yes.**  
 7 Q. Is the model itself the accounting tool or basis  
 8 for proposing this lowering of the minimum index  
 9 levels?  
 10 **A. Yes.**  
 11 Q. And was that also due to the City's stated  
 12 concern that they needed more credits to be  
 13 pumped during their drought modeling?  
 14 **A. Can you just repeat that?**  
 15 Q. Well, in other words, and I'm not saying what  
 16 your opinion is in this regard, but is it your  
 17 understanding, at least, that based on the  
 18 City's testimony that part of their modeling and  
 19 their proposal is to try and help them obtain  
 20 more credits in the time of a drought?  
 21 **A. I believe to enable them to be able to divert**  
 22 **some credit.**  
 23 Q. Is it your understanding that this proposal  
 24 that's been submitted by the City was written by  
 25 Burns & McDonnell in conjunction with the City?



1 **A. Yes.**  
2 Q. And it includes some analysis of the 1 percent  
3 drought; is that -- is that right?  
4 **A. It does.**  
5 Q. Is there any reporting in the City's proposal as  
6 to the hydrologic impacts to rivers or wells  
7 where the aquifer drawdown would occur?  
8 **A. There's not.**  
9 Q. Let's focus on the fact that this information is  
10 absent from the proposal. It seems odd to file  
11 a proposal with the Kansas Department of  
12 Agriculture to allow lowering of the proposed  
13 minimum index levels but not report the  
14 hydrologic effects associated with the lowering;  
15 is that -- is that true?  
16 **A. I do -- I do a lot of work like this in**  
17 **New Mexico, and in that setting, the model's**  
18 **used to analyze the change to the system that**  
19 **will occur from an application. So having**  
20 **worked in that realm, I would say it seemed**  
21 **maybe a little odd, yeah, that there wasn't a**  
22 **lot of detail on that. There -- there are some**  
23 **results presented in terms of saturated**  
24 **thickness change and water level elevations,**  
25 **there's just not detail about wells or impacts**

1 **to rivers.**  
2 Q. Do you understand as it exists in -- and I'm not  
3 going to ask you for a legal interpretation,  
4 just to clear the objections, but do you  
5 understand what it means to divert groundwater?  
6 Do you understand what a diversion is of  
7 groundwater?  
8 **A. Yes, it's pumping groundwater out of an aquifer**  
9 **and you can meter it and know how much you take.**  
10 Q. Okay. And so if I were to refer to the term  
11 diversion, you understand that that has a -- a  
12 term of significance in the area of groundwater  
13 modeling and pumping; is that right?  
14 **A. Yes.**  
15 Q. Okay. Would the lowering to -- from the 1993  
16 level to a new level, would that effectively be  
17 a new diversion of groundwater with associated  
18 impacts to nearby rivers and neighboring wells?  
19 **A. From a technical standpoint, the way that I see**  
20 **it, yes. The City doesn't have a permit that**  
21 **allows that to happen. It seems to me that's**  
22 **what's being applied for or proposed.**  
23 Q. In the proposal developed by Burns & McDonnell,  
24 how are the hydrologic effects of their modeling  
25 reported? And -- and if you could turn to that

1 proposal document before you, if you need it, to  
2 help answer this question.  
3 **A. There -- there are results on figures 11 -- I'm**  
4 **sorry, hang on. Okay. There are results**  
5 **related to analysis in figure 6, 7, 8, and 9**  
6 **that illustrate groundwater elevations and**  
7 **percent of saturated thickness of aquifer from**  
8 **predevelopment condition. There are also some**  
9 **figures, figure 10 and 11, that report remaining**  
10 **average thickness of the aquifer. And so those**  
11 **are some results that are presented, just not at**  
12 **the detail of impacts to wells -- impacts to**  
13 **wells in the area or to rivers.**  
14 Q. So show me in the report where the proposal and  
15 any of the associated attachments address the  
16 hydrologic effects of the City's proposal on  
17 rivers.  
18 **A. I didn't find any in there, it's not in there.**  
19 Q. In other words, it's not addressed at all in any  
20 of the City's reports, any of their attachments,  
21 or any of the modeling; is that correct?  
22 **A. I didn't find it.**  
23 Q. Same question with respect to the hydrologic  
24 effects on area wells, show me in the City's  
25 proposal or all the related attachments where

1 they indicate the impacts to area wells in the  
2 well field.  
3 **A. It's -- it's not in there.**  
4 Q. In other words, once again, it wasn't addressed  
5 at all by the City?  
6 **A. It's not reported on. I don't know if it was**  
7 **analyzed, but it's not reported on in the -- in**  
8 **the proposal.**  
9 Q. And to clarify what you mean as reported on in  
10 the proposal, would you agree with me that it's  
11 not reported on in the proposal, all the  
12 attachments, and all the input files that you  
13 were asked to review?  
14 **A. I agree.**  
15 Q. I would ask that you -- I did see you turn to a  
16 few -- a few figures, if you will, where you  
17 were talking about hydrologic effects. Could  
18 you flip to one of those pages and tell me which  
19 one it is?  
20 **A. Looking at figure 11 right now.**  
21 Q. And states -- okay, figure 11 and that's right  
22 after page 2-25 --  
23 **A. Yes.**  
24 Q. -- in the proposal?  
25 **A. Yes.**

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1 Q. This is looking at impacts to remaining  
 2 saturated thickness based on the City's  
 3 modeling, is it not, based on what? The  
 4 lowering of the minimum index levels? I'd ask  
 5 that you look at the bottom right-hand portion  
 6 of figure 11, if that helps to --  
 7 **A. Yeah.**  
 8 Q. -- refresh your memory as far as what this is  
 9 showing.  
 10 **A. Yeah, it's showing the -- at each index cell,**  
 11 **it's showing the average remaining aquifer**  
 12 **thickness.**  
 13 Q. Okay.  
 14 **A. Based on the -- on the proposed minimum index**  
 15 **level.**  
 16 Q. Now, Mr. Romero, we'll cover this in greater  
 17 detail later, but in figure 11, is this  
 18 essentially looking at averages for a  
 19 two-by-two-mile index cell essentially, is that  
 20 what it's looking at?  
 21 **A. Yes.**  
 22 Q. Same question with respect to figure 10, and  
 23 you're going to have to flip back just a few  
 24 pages to find figure 10, is that also looking at  
 25 two-by-two-mile-area averages for these index

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1 cells?  
 2 **A. It is.**  
 3 Q. In other words, neither figure 10 nor figure 11  
 4 zero in and focus on the effects to any  
 5 individual wells. Is that -- is that a true  
 6 statement?  
 7 **A. It reports the -- the well -- the index well but**  
 8 **not to other -- other wells in the area.**  
 9 Q. So was that a correct statement, then?  
 10 **A. Can you --**  
 11 Q. That this is simply by cell and not focusing on  
 12 individual wells?  
 13 **A. Not other wells besides the index well.**  
 14 Q. Are figures 10 and 11 based on the bedrock  
 15 elevations reported in the actual model?  
 16 **A. I think they are just related to aquifer**  
 17 **thickness that's simulated in the model, and**  
 18 **that is above the bedrock, yes.**  
 19 Q. Mr. Romero, I believe that you were partially in  
 20 the room and you've also reviewed testimony that  
 21 occurred with respect to Mr. Letourneau, and  
 22 actually I think you were in the room when there  
 23 was original testimony about this concept of  
 24 practical saturated thickness. Do you recall  
 25 that discussion?

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1 **A. I recall that discussion.**  
 2 **MR. MCLEOD:** I'm going to object to  
 3 this line of questioning being opened with  
 4 this witness. As we've gone through  
 5 before, it was brought out legitimately  
 6 with Mr. Letourneau on cross, but the  
 7 District is sponsoring this witness and  
 8 this is not a topic that he covered in his  
 9 report.  
 10 **MR. STUCKY:** I'll -- I'll come back  
 11 to that point. For now, although I'm not  
 12 going to concede that this issue is not  
 13 addressed in the report, I would like to  
 14 have the opportunity to have a more  
 15 organized and detailed response to that  
 16 objection. So I'm going to move on in my  
 17 line of questioning for now.  
 18 **BY MR. STUCKY:**  
 19 Q. Can you refer back to the document that is from  
 20 USGS that talks about the model analysis and the  
 21 specifications for the model itself? And was  
 22 that Exhibit 46, I believe?  
 23 **A. 46?**  
 24 Q. Yeah. Is that right?  
 25 **A. Yes.**

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1 Q. In Exhibit 46, does it say that the USGS model  
 2 shouldn't be used to look at individual wells,  
 3 is that stated somewhere in that document?  
 4 **A. That statement sounds familiar. I have to go**  
 5 **to --**  
 6 Q. And when I say that, I'm referring to the  
 7 MODFLOW model in its unaltered format.  
 8 **A. Yes. Yes, you are referring to that, and you**  
 9 **want me to find where it says that?**  
 10 Q. To speed this process up, no. Would you --  
 11 would you agree with me that it does state that  
 12 somewhere?  
 13 **A. There is a statement like that in there, along**  
 14 **that line in here.**  
 15 Q. And is it true that when authors write models,  
 16 usually they will express various disclaimers or  
 17 limitations, if you will?  
 18 **A. Yes.**  
 19 Q. Now, did you take steps to modify -- modify the  
 20 MODFLOW modeling that was performed in this case  
 21 so you could look at the impacts of water  
 22 levels -- or the impacts, I'm sorry, to rivers  
 23 and wells in the area?  
 24 **A. I did. And the way that I -- the way that I use**  
 25 **models to evaluate effects to wells is I**

1 consider models to be -- or most general models  
2 to be suitable for assessing impacts to well  
3 areas, not necessarily a specific individual  
4 well. You can have -- you can have an area  
5 where there are wells and you have a model cell  
6 that represents really multiple wells in an  
7 area. And some wells may behave a little  
8 differently and some may behave just like the  
9 model, but the model can be used to kind of  
10 characterize an average condition in the area of  
11 these wells.

12 Q. And, Mr. Romero, I just want to make sure I  
13 clear the record here, you said that the City,  
14 in what you reviewed, didn't indicate any impact  
15 to the hydrologic effects to rivers or area  
16 wells. Do you recall that testimony?

17 A. Yes.

18 Q. Just to clarify, to break this down into two  
19 components, on one hand, there's the model that  
20 impacts of lowering the minimum index level; is  
21 that right?

22 A. Yes.

23 Q. To just clarify this breakdown, you didn't find  
24 any indication or results that indicate the  
25 impacts to rivers or area wells with respect to

1 pumping ASR credit. And when I saw that I could  
2 do that sort of thing, that created a framework  
3 in my mind where I could develop some model  
4 scenarios to help me examine what the effects  
5 are from pumping ASR credit.

6 And if I could do that, then I could  
7 actually isolate what the effect would be of  
8 lowering the water level from the current  
9 minimum index level to the proposed minimum  
10 index level. And then I could actually quantify  
11 the effect of what's being proposed to do and --  
12 and I could also examine the effect of pumping  
13 the City's water right in a framework that fits  
14 their overall plan to pump its 40,000 acre-feet  
15 water right prior to pumping credit.

16 Q. Mr. Romero, I hope you still have it in front of  
17 you, could you turn back to your expert report?

18 A. I have it.

19 Q. Could you turn with me to figure 1 in your  
20 expert report? And tell me when you're on  
21 figure 1 in your expert report.

22 A. I'm there.

23 Q. In a general sense, what -- what is figure 1?

24 A. Figure 1 was an example simulation that I did,  
25 and it's actually a simulation that

1 lowering the minimum index level. Is that a  
2 true statement?

3 A. Yes.

4 Q. And, similarly, if the aquifer maintenance  
5 credit proposal was adopted and the City models  
6 this eight-year drought and the effects of that  
7 eight-year drought, that also didn't analyze the  
8 impacts to rivers or area wells; is that true?

9 A. That analysis is not included.

10 Q. That said, you had just indicated to me that you  
11 took it upon yourself to try to modify the model  
12 and work with this MODFLOW model to see if you  
13 could analyze the impacts to both rivers and  
14 area wells, notwithstanding the fact that the  
15 City didn't do any of that work; is that right?

16 A. Yes.

17 Q. To do so, did you have to separate the model  
18 into two categories of City pumping on one hand  
19 native water rights and, number two, credits  
20 associated with the ASR?

21 A. Yes, yes. When I got the model files and I  
22 worked with the model, it became apparent to me  
23 that -- that I could do that sort of analysis,  
24 that I could actually isolate City -- pumping  
25 the City's groundwater right from the City

1 illustrates -- illustrates a -- it's a budget  
2 analysis, it's a water budget analysis of what  
3 happens if the City pumps its ASR recharge  
4 credit in the 1 percent drought scenario.

5 So the chart is really illustrating -- it's  
6 a chart, the vertical axis is -- is just a  
7 budget component, there's a positive and a  
8 negative portion. The upper half is the  
9 positive portion. And then you see some maroon  
10 blocks, that's actually the magnitude of pumping  
11 of -- of recharge credit. So the upper half,  
12 those maroon blocks represent a quantity of  
13 pumping. And the lower half of the chart has a  
14 blue area and a gray area.

15 So what's interesting about working with  
16 these models is they enable you to specify some  
17 pumping, in this case the City's recharge credit  
18 in the 1 percent drought scenario on the upper  
19 half, and then the model comes back and tells  
20 you the colors on the lower half. The blue  
21 represents water that is removed from streams,  
22 and the gray represents water that is removed  
23 from the aquifer.

24 So there's a balancing that happens. If  
25 you pump a well with certain amount, say, ten

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1 **units of water and you're in an area like where**  
 2 **the City is where you're near rivers, a portion**  
 3 **of those ten units are going to come from the**  
 4 **aquifer, and the remaining portion is going to**  
 5 **come from the river. So there's a balancing**  
 6 **that happens. So this illustrates the balance**  
 7 **of effects to aquifer -- to water removed from**  
 8 **the aquifer and water that's removed from the**  
 9 **rivers with the blue bands and the gray bands.**  
 10 Q. And -- and just for a simple understanding of  
 11 what figure 1 is, is figure 1 an example of  
 12 using the model to isolate the hydrologic  
 13 effects of pumping recharge credits in the Burns  
 14 & McDonnell 1 percent drought simulation?  
 15 **A. Yes, that's exactly what it is. Once I found**  
 16 **that I could distinguish between pumping the**  
 17 **water right from pumping ASR credit, then I saw**  
 18 **that I could -- this is just an example of**  
 19 **showing one component here, the credit portion,**  
 20 **then that enabled me to think of some scenarios**  
 21 **that I could run to analyze the effect of the**  
 22 **proposal.**  
 23 Q. So some of this analysis that you performed as  
 24 shown in figure 1 was not performed by Burns &  
 25 McDonnell or not included in the report; is that

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1 right?  
 2 **A. Burns & McDonnell ran the 1 percent drought**  
 3 **simulation but did not illustrate a budget**  
 4 **analysis component like this.**  
 5 Q. So when you were -- you referred earlier to  
 6 capturing both the effects of native water  
 7 rights and the credit associated with ASR  
 8 credits. When you refer to the native rights,  
 9 did you use 40,000 acre-feet, which also  
 10 represents what the City has?  
 11 **A. Yes.**  
 12 Q. I would ask that you turn in the proposal before  
 13 you to table 2-5, which is found on page 2-10 of  
 14 the City's proposal.  
 15 **A. I'm there.**  
 16 Q. To cross-reference some of the work that's shown  
 17 in figure 1 of your report, at least in some  
 18 fashion, does it cross-reference some of the  
 19 information found in table 2-5 shown on 2-10 of  
 20 the City's proposal document?  
 21 **A. Yes.**  
 22 Q. And so if we were trying to draw a comparison to  
 23 help understand where you were getting these  
 24 numbers that you were basing this extensive  
 25 modeling on, we could look at table 2-5; is that

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1 that -- is that correct?  
 2 **A. We could. It's actually table 2-5, there's an**  
 3 **ASR credit pumping, it's the one, two, three,**  
 4 **four, five, six, seven, it's the eighth row down**  
 5 **on the table, it's City of Wichita ASR credit**  
 6 **pumping. And the -- the credit pumping that's**  
 7 **there is what's represented on figure 1.**  
 8 Q. Mr. Romero, it was already stated as part of the  
 9 record that table 2-5 contains some errors.  
 10 Based on the fact that there are errors in table  
 11 2-5, does that skew your opinions or change your  
 12 opinions as far as what's included in the City's  
 13 modeling and what's not?  
 14 **A. No, I -- well, see, I actually had the model**  
 15 **files when I ran this, and I know what error**  
 16 **you're talking about, you're talking about model**  
 17 **stress period five on that same row that I was**  
 18 **talking about where it says 15,552. I ran this**  
 19 **using the model files that were provided, and**  
 20 **the model files didn't have that 15,552. The**  
 21 **model files had the 16,000, you know, closer to**  
 22 **the 16,579, which I think is the number that was**  
 23 **reported to be corrected. So for what I ran**  
 24 **here, it doesn't include that error, from what I**  
 25 **can see.**

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1 Q. Did Burns & McDonnell break out the components  
 2 of pumping?  
 3 **A. They broke out the amount of recharge on that**  
 4 **same row of the table that I described. On the**  
 5 **row right above it, they report total Equus**  
 6 **basin well field and ASR, so that would be the**  
 7 **sum of the well field and the credit. So this**  
 8 **table gives the ability to break it out, but**  
 9 **there -- there aren't analyses that report it**  
 10 **the way that I do.**  
 11 Q. So in other words, you were able to utilize some  
 12 of the information contained in table 2-5 and  
 13 take it a step further, is that a different way  
 14 to state this?  
 15 **A. Yes.**  
 16 Q. And in doing so, you were able to isolate the  
 17 impacts of recharge credits on both rivers as it  
 18 relates to minimum desirable streamflow and also  
 19 the impacts to water levels as it relates to  
 20 individual wells. Is that a true statement?  
 21 **A. Yes.**  
 22 Q. Once you realized that this type of analysis was  
 23 possible, what did you do?  
 24 **A. I -- I developed a set of scenarios, three**  
 25 **scenarios that would allow me to examine the**

1 **effect of the proposal. And so I came up with**  
2 **three scenarios, they're listed in my report as**  
3 **scenarios A, B, and C.**  
4 Q. Before we get there, as it relates to river  
5 depletion, as shown on figure 1 in your report,  
6 what does the figure 1 tell us about the  
7 impacts, hydrologic impacts to river depletion  
8 based on if the City is to pump their recharge  
9 credits?  
10 **A. It tells us that -- if you look at the bottom**  
11 **half of the chart, there's a gray area, and the**  
12 **gray area is labeled with 18,700 acre-feet.**  
13 **That means that according to the accounting**  
14 **model, 18,700 acre-feet of water is removed from**  
15 **the aquifer. And if you look at the blue area,**  
16 **that totals 30,000 -- 30,100 acre-feet, that**  
17 **means that that much water is removed from**  
18 **rivers. It's removed from the Little Arkansas**  
19 **and from the Arkansas combined.**  
20 Q. And -- and this is based on what the City  
21 reported in table 2-5 with regard to pumping of  
22 ASR credits; is that right?  
23 **A. That's correct. And --**  
24 Q. So --  
25 **A. And there's one other component on the chart,**

1 **it's off to the right in green labeled as ET.**  
2 **So there's also some evapotranspiration that is**  
3 **salvaged. So vegetation is consuming**  
4 **evapotranspiration, but when water levels lower,**  
5 **the vegetation consumes a little bit less.**  
6 Q. Mr. Romero, you based figure 1 on what the City  
7 reported in table 2-5 as far as the amount of  
8 ASR credits that they would be pumping based  
9 strictly on this table 2-5; is that right?  
10 **A. Yes.**  
11 Q. Does it suffice to say -- and follow with me for  
12 a moment. Let's say the City accumulated  
13 120,000 acre-feet of recharge credits, are you  
14 following me?  
15 **A. Yes.**  
16 Q. Does it suffice to say that if the City over the  
17 course of eight years were to withdraw  
18 120,000 acre-feet of recharge credits there  
19 would be a much greater effect on river  
20 depletion?  
21 **MR. OLEEN:** I object. Feel free to  
22 correct me, Mr. Stucky, my objection is  
23 whether the expert report discusses the  
24 120,000 cap or not. I'm not thinking it  
25 does. Please correct my ...

1 **MR. STUCKY:** If I really need to  
2 take some time to see if this 120,000 foot  
3 number is referenced in the report, I think  
4 that flows very logically out of this  
5 figure 1 and the research he's already  
6 done. I think it was a simple question  
7 that he can easily answer based on the work  
8 he did in figure 1. So I think it's highly  
9 irrelevant actually whether he mentions the  
10 120,000 acre-foot cap, I think he can  
11 answer these questions, it's well within  
12 the province of this witness, it's well  
13 within the scope of the modeling he already  
14 did, so I think these are questions I can  
15 ask.  
16 Actually, I don't think I need to look  
17 in the expert report to see if it's  
18 referenced; I think it's well within the  
19 scope and the understanding of this witness  
20 and what's already been outlined in the  
21 figures and models. To try and exclude him  
22 from rendering an opinion just merely based  
23 on the fact that the number 120,000 isn't  
24 in the report, I think is an irrelevant  
25 basis.

1 **PRESIDING OFFICER:** I find this  
2 question relevant and helpful so I'll allow  
3 it.  
4 **MR. STUCKY:** Thank you.  
5 **BY MR. STUCKY:**  
6 Q. Let's -- let's back up again and start that line  
7 of questioning over, Mr. Romero. Figure 1 is  
8 based on the City's predicted pumping of ASR  
9 credits as shown in figure 1; is that right?  
10 **A. Yes.**  
11 Q. I'm sorry, table 2-5.  
12 **A. As shown in table 2-5 and I examined it on**  
13 **figure 1, yes.**  
14 Q. Okay. And when Mr. Pajor was testifying and you  
15 were here, he testified that he guessed that the  
16 amount of recharge credits that the City would  
17 use in a drought would be somewhere just north  
18 of 50,000 based on table 2-5 in their proposal.  
19 Do you remember that testimony?  
20 **A. Yes.**  
21 Q. So you were analyzing a scenario where 50,000  
22 some acre-feet of credits are withdrawn over a  
23 course of time as shown by the City, and you  
24 indicated that there would be a depletion in  
25 river levels or river depletion to the tune of

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1 30,100 acre-feet; is that right?  
 2 **A. Yes.**  
 3 Q. So now let's go back to my scenario, my scenario  
 4 is this: In the City's proposal, there is a cap  
 5 of 120,000 acre-feet of credits, is there not?  
 6 **A. Yes.**  
 7 Q. So at least from a conceptual standpoint, the  
 8 City could accumulate up to 120,000 acre-feet of  
 9 credits, could they not?  
 10 **A. Yes.**  
 11 Q. If the City -- now assume with me for a moment  
 12 the City accumulates 120,000 acre-feet of  
 13 credits, you follow me?  
 14 **A. I do.**  
 15 Q. If the City then were to withdraw 120,000  
 16 acre-feet of credits over the course of eight  
 17 years, would you agree with me that the  
 18 depletion of river levels would be much greater  
 19 than what you show in figure 1?  
 20 **MR. OLEEN:** I object because to  
 21 withdraw 120,000 acre-feet over eight  
 22 years, currently, there's an authorized  
 23 withdrawal of either 18 or 19,000 acre-feet  
 24 of recharge credits, and so I object  
 25 because I think it is outside the scope of

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1 the proposal. No, not the -- it's outside  
 2 the scope in the sense that that's not the  
 3 current authorization. You can't withdraw  
 4 120,000 over eight years.  
 5 **PRESIDING OFFICER:** I'm kind of  
 6 confused because I think --  
 7 **MR. OLEEN:** Upon doing some math, I  
 8 withdraw my objection.  
 9 **PRESIDING OFFICER:** Is it Friday  
 10 yet?  
 11 **MR. MCLEOD:** On form of the  
 12 question, though, I'm going to ask for a  
 13 clarification, what assumption is being  
 14 made about the City's native rights in this  
 15 scenario?  
 16 **BY MR. STUCKY:**  
 17 Q. Let's back up. Mr. Romero, in figure 1, you  
 18 made some assumptions about the use of the  
 19 City's native rights in figure 1; is that right?  
 20 **A. In figure 1, this is actually an isolation of**  
 21 **the credit, but it's based on a simulation that**  
 22 **represents the City's native right as it's**  
 23 **depicted in table 2-5 of page 2-10 of the**  
 24 **proposal.**  
 25 Q. So let's back up on this hypothetical again.

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1 Let's assume that my hypothetical assumes the  
 2 same use of native rights as shown in table 2-5  
 3 of the City's proposal, are you following?  
 4 **A. I do.**  
 5 Q. Now, going back to our question, if the City  
 6 were to withdraw 120,000 acre-feet of credits  
 7 over the course of eight years, would that have  
 8 a greater hydrologic impact on river depletion  
 9 during that time?  
 10 **A. It would. The figure 1 that I'm showing is**  
 11 **compatible with diverting about 50,300 acre-feet**  
 12 **in -- in eight years.**  
 13 Q. And so that's showing -- and that's showing a  
 14 river depletion of 30,100 acre-feet. Would you  
 15 agree with me that if we were to withdraw  
 16 120,000 acre-feet of credits over that course of  
 17 time, the impacts to river depletion would be  
 18 much greater?  
 19 **A. It would be greater. Maybe on the order of**  
 20 **twice the amount because we'd be -- a little**  
 21 **more than twice the amount because we're**  
 22 **diverting about 50,000, and 120,000 is a little**  
 23 **more than twice that. And -- and also I said**  
 24 **that the recharge was diverted over eight years,**  
 25 **but if it's actually -- there's not recharge**

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1 **diverted every single year in this case; it's**  
 2 **only diverted in years two, three, four, five,**  
 3 **and six. So five out of the eight years the**  
 4 **credit is taken. But to answer your question,**  
 5 **if the scenario were similar but were 120,000**  
 6 **acre-feet diverted, the river depletion would be**  
 7 **greater, yes.**  
 8 Q. And, in fact, 180,000 -- again, just to clarify  
 9 the record based on math, 180,000 -- or 120,000  
 10 acre-feet of credits could be withdrawn at a  
 11 rate of 18,000 acre-feet a year in a time period  
 12 in something less than eight years; is that  
 13 right?  
 14 **A. Hypothetically, sure.**  
 15 Q. Okay. So you indicated that you did your own  
 16 analysis with respect to what Burns & McDonnell  
 17 did, and you were starting to elaborate on your  
 18 analysis and an example simulation that you  
 19 performed; is that right?  
 20 **A. Yes.**  
 21 Q. Tell me what that example simulation looked like  
 22 and what the components were.  
 23 **A. So the example simulation is -- it's got three**  
 24 **components. It's broken into scenarios A, B,**  
 25 **and C. Scenario A is a simulation that isolates**

1 the effect of the City pumping its water right,  
2 its existing water right of 40,000 acre-feet per  
3 year. Scenario B is a simulation that takes  
4 away the rest of the water remaining after  
5 considering the water right first until you  
6 lower levels down to the existing minimum index  
7 level. So scenario A diverts the water right in  
8 its entirety every year; scenario B takes the  
9 rest of the water that's remaining but only down  
10 to the level of the current minimum index level.  
11 So that's credit water that is taken.

12 Q. So there's some similarity, then, to this  
13 example, to the 1 percent drought simulation or  
14 scenario performed by the City?

15 A. There is similarity in it. In fact, if you look  
16 at table 2-5 on page 2-10 of the proposal and  
17 you look at the row that has total Equus basin  
18 well field and ASR credit and you -- if you look  
19 at the row beneath it, you can see how much  
20 credit is pumped. And if you look at both --  
21 both rows together, you can see that just about  
22 every year the City diverts almost the full  
23 40,000. It's only the first year, 34,000 is  
24 diverted. Every other year after that, 40,000  
25 is diverted except for the last two years but

1 it's 39,000. So, basically, the City's  
2 1 percent drought scenario is diverting almost  
3 40,000 acre-feet every single year. My scenario  
4 is actually diverting 40,000 acre-feet every  
5 single year.

6 Q. So turn with me, then -- well, I want to back up  
7 and just ask you one question on figure 1. Just  
8 so we're clear for the record, when the City  
9 pumps groundwater, including the recharge  
10 credits, that gray area shows a significant  
11 depletion in the aquifer storage area; is that  
12 right?

13 A. On figure 1?

14 Q. Yes, on figure 1 very quickly --

15 A. Yes.

16 Q. -- just for the record.

17 A. Yes, 18,700 acre-feet, yes.

18 Q. Okay. Let's turn to figure 2.

19 A. And I'll note that figure 1 and figure 2, the  
20 vertical axes are scaled the same. In fact,  
21 they're scaled the same on the first four  
22 figures, so that way they're visually  
23 comparative in terms of magnitude.

24 Q. I'm not exactly sure what you just said, but  
25 could you explain to me the three scenarios that

1 you were looking at as it relates to figure 2?

2 A. Yes. So figure 2 is actually scenario A, and  
3 this is how the aquifer and river system -- this  
4 is how the hydrologic system responds if the  
5 City pumps its native 40,000 acre-foot per year  
6 water right for eight years during the drought.  
7 So the maroon area is actually just a constant  
8 band of diversion, which is 40,000 acre-feet per  
9 year. And the lower half of the chart, the gray  
10 area, is the water that's removed from the  
11 aquifer. And the blue area is the water that's  
12 removed from the river. So this is what happens  
13 if the City diverts its full native water right  
14 every year during that eight-year drought.

15 Now, if you look at -- if you go from  
16 figure 2 to figure 3 --

17 Q. Let me just back up very quickly, Mr. Romero, to  
18 figure 2. So if the City is to pump their  
19 native credits during an eight-year drought,  
20 they would essentially deplete river levels to  
21 the tune of 146,300 acre-feet based on your  
22 analysis?

23 A. Yes.

24 Q. Okay. And there would also be aquifer storage  
25 depletion to the tune of 155,400 acre-feet, is

1 that what this is showing?

2 A. Yes.

3 Q. Explain, though, for the record, very quickly  
4 what that green band is.

5 A. The green band is evapotranspiration; that is  
6 water that otherwise would have gone to  
7 vegetation. That's water that would go to  
8 vegetation but for the pumping done by the City.

9 Q. As we're turning to figure 3 and everyone's  
10 flipping in their notebooks, what is the -- is  
11 this a example of a water budget analysis that  
12 you're performing?

13 A. Yes, it's completely a water budget analysis.  
14 It's showing how when you pump a well at a  
15 certain amount, the water is removed from the  
16 aquifer and from the river and from  
17 evapotranspiration to vegetation in a  
18 balancing -- in a balancing act. The system has  
19 to balance the amount of water that's removed  
20 from the wells. Part of it comes from the  
21 aquifer and part comes from the rivers.

22 Q. In figure 2, there's a lot of information shown  
23 in figure 2, if I'm to look at this left-hand  
24 column, this vertical axis. Do you follow where  
25 I'm looking?

1 **A. Yeah.**  
 2 Q. It refers to hydrologic budget components and  
 3 it's listed in terms of cfs; is that right?  
 4 **A. Yes, that's cubic feet per second.**  
 5 Q. Okay. So is what this is telling me is that in  
 6 the first year of the City's pumping as shown on  
 7 this chart that essentially there would be a  
 8 depletion to rivers after the first year to the  
 9 tune of approximately 10 cfs?  
 10 **A. Yes, that's exactly what it's saying. You just**  
 11 **take a look at the horizontal axis, the 1**  
 12 **represents one year, and if you just go up to**  
 13 **where the blue band is, the blue band is coming**  
 14 **down to about 10 cfs. If you go to the second**  
 15 **year, it's at about 20 cfs depletion.**  
 16 Q. Okay. That helps me to understand that table.  
 17 **PRESIDING OFFICER:** I'm confused  
 18 about the maroon band.  
 19 **A. The maroon band is a constant amount of pumping**  
 20 **every single year. And -- and that maroon band**  
 21 **is the total of 40,000 acre-feet per year**  
 22 **diverted from the well.**  
 23 **PRESIDING OFFICER:** For how many  
 24 years?  
 25 **A. For eight years.**

1 Q. Okay. So is what this -- does this, then, imply  
 2 that if the City diverts 40,000 acre-feet before  
 3 diverting their ASR credits, then much of the  
 4 water diverted from above the current minimum  
 5 index level is to satisfy the 40,000 acre-feet  
 6 of water rights?  
 7 **A. That's -- that's exactly what that means. That**  
 8 **means if the City diverts its water right,**  
 9 **40,000 acre-feet per year for eight years during**  
 10 **this drought condition, most of the water above**  
 11 **the current minimum index level is removed to**  
 12 **satisfy that water right. Much of the water is.**  
 13 Q. Now let's move to figure 4. Well --  
 14 **A. So -- so let me explain it like this. You take**  
 15 **out the water right and then there's some water**  
 16 **left there above the current minimum index**  
 17 **level. Figure 3 shows how much you get if you**  
 18 **lower it to the current minimum index level.**  
 19 **Then figure 4 is going to tell us how much more**  
 20 **water you get if you lower it to the proposed**  
 21 **minimum index level.**  
 22 Q. And just -- just to clarify these tables, just a  
 23 minor issue of housekeeping, the City relied on  
 24 these 1998 levels, did they not, as a starting  
 25 point?

1 **PRESIDING OFFICER:** Okay.  
 2 **BY MR. STUCKY:**  
 3 Q. Now, Mr. Romero, could you turn now with me to  
 4 figure 3? I think you wanted to turn -- turn to  
 5 that a moment ago before I had fully understood  
 6 figure 2. Now that you've turned to figure 3,  
 7 what -- what is figure 3 showing?  
 8 **A. Figure 3 shows the amount of water that's**  
 9 **produced after the City diverts its water right**  
 10 **for eight years. So in the proposal it**  
 11 **describes a goal by the City to divert the**  
 12 **40,000 acre-feet per year water right prior to**  
 13 **diverting credit. So if the City diverts its**  
 14 **40,000 acre-foot per year water right for eight**  
 15 **years during the drought, you get the picture**  
 16 **that we just looked at on figure 2. Figure 3**  
 17 **shows the amount of water that's still available**  
 18 **above the current minimum index level that could**  
 19 **be produced as credit, when you're pumping**  
 20 **credit rather than pumping the water right. So**  
 21 **it actually shows that there's not that much**  
 22 **water left to divert. There's about**  
 23 **14,900 acre-feet water that's available to**  
 24 **divert, and that's the maroon area that's right**  
 25 **there.**

1 **A. Yes.**  
 2 Q. Did you rely on the same levels as far as the  
 3 starting point for your analysis?  
 4 **A. I did, yes.**  
 5 Q. Okay. Just to clarify that. On figure 3, one  
 6 other question in that regard, this is looking  
 7 at impacts to river depletion if the minimum  
 8 index level remains at the 1993 level; is that  
 9 right?  
 10 **A. Yes.**  
 11 Q. And this is, in fact, from the scenario you just  
 12 described showing river depletion to the tune of  
 13 10,200 acre-feet based on these recharge credits  
 14 being pumped; is that right?  
 15 **A. Yes.**  
 16 Q. And it's also showing, if we are using the 1993  
 17 levels, aquifer storage depletion to the tune of  
 18 5,200 acre-feet; is that right?  
 19 **A. Yes.**  
 20 Q. And then there's a figure for  
 21 evapotranspiration, I'm not sure I said it  
 22 right, also shown in this figure?  
 23 **A. Yes. Yes. So you can -- you can really think**  
 24 **of it as the maroon portion is the volume that's**  
 25 **removed by the wells; the gray and the blue**



1 **bands are telling you where the water is**  
 2 **depleted from. The gray is it comes from the**  
 3 **aquifer, the blue is it comes from the river.**  
 4 Q. So scenario B was based on the current minimum  
 5 index levels, right?  
 6 **A. Yes.**  
 7 Q. So now let's turn to figure 4 which is based on  
 8 lowering the water levels to the proposed  
 9 minimum index levels, right?  
 10 **A. Yes.**  
 11 Q. What happens, based on your analysis shown in  
 12 figure 4, if we are to lower to the new proposed  
 13 minimum index levels?  
 14 **A. More water is produced, the -- the maroon**  
 15 **portion is a total of 79,500 acre-feet, that's**  
 16 **more water that's produced, that's credit water**  
 17 **that's produced to the -- to the wells that the**  
 18 **wells divert. And the gray portion at the**  
 19 **bottom is 30 -- out of that 79,500, 33,100 comes**  
 20 **from the aquifer, is removed from the aquifer,**  
 21 **and the blue portion is 43,800 acre-feet that's**  
 22 **removed from the Little Arkansas and the**  
 23 **Arkansas Rivers.**  
 24 Q. So what you were trying to do with figure 4 is  
 25 to isolate the impacts of pumping recharge

1 about a difference of 10,200 acre-feet versus  
 2 43,800 acre-feet. Would you agree with me that  
 3 40,800 acre-feet depicts a scenario where  
 4 there's a depletion of river levels that are  
 5 four to five times greater than if these minimum  
 6 index levels remain the same?  
 7 **A. Yes.**  
 8 Q. Would you also agree with me, Mr. Romero, that  
 9 looking at 33,100 acre-feet of aquifer storage  
 10 depletion with the new minimum index levels  
 11 versus 5,200 acre-feet of depletion with the  
 12 current minimum index levels, would you agree  
 13 with me that the depletion, then, is to the tune  
 14 of at least six times greater if we drop the  
 15 bottoms?  
 16 **A. Yes.**  
 17 Q. Now, you said earlier that the City by dropping  
 18 to a new index level, you indicated that that's  
 19 consistent with a new diversion of groundwater;  
 20 is that correct?  
 21 **A. Yes.**  
 22 Q. And does figure 4 explain the basis for that  
 23 official expert opinion that you rendered? Or  
 24 help to explain the rationale for that  
 25 conclusion?

1 credits based on when there's a new proposed  
 2 minimum index level; is that right?  
 3 **A. That's exactly right, that's exactly what I was**  
 4 **trying to do here was to isolate the effect of**  
 5 **the proposal.**  
 6 Q. And based on all the extensive, additional  
 7 modeling you performed, if we're to lower the  
 8 minimum index level to this new level, is figure  
 9 4 showing us that we can expect a depletion of  
 10 rivers to the tune of 42,800 acre-feet?  
 11 **A. Yes.**  
 12 Q. Is figure 4 also showing us that there's going  
 13 to be a depletion in the aquifer storage area to  
 14 the tune of 33,100 acre-feet?  
 15 **A. Yes.**  
 16 Q. So in other words, the impacts both to the  
 17 aquifer and to minimum desirable streamflow if  
 18 we were to lower this minimum index level is  
 19 much greater as shown in figure 4; is that  
 20 right?  
 21 **A. It's -- it's greater than if you don't lower it,**  
 22 **than if you don't lower the proposed minimum**  
 23 **index level, yes.**  
 24 Q. Well, as we're talking about the impacts to  
 25 minimum desirable streamflow, we're talking

1 **A. Figure 4 outlines a water budget analysis of**  
 2 **what that new diversion will do. I -- I**  
 3 **consider it a new diversion because it's what's**  
 4 **being applied to do.**  
 5 Q. So in other words, would the answer to the  
 6 question I just posed to you, would the answer  
 7 to that question then be yes, because this is  
 8 helping to depict or formulate your opinion,  
 9 expert opinion that there's a new diversion of  
 10 groundwater that's occurring?  
 11 **MR. OLEEN:** I think I object because  
 12 new diversion, isn't that like diversion of  
 13 groundwater is a legal concept under the  
 14 Kansas Water Appropriation Act, so is that  
 15 what you mean when you ask him is it a new  
 16 diversion?  
 17 **PRESIDING OFFICER:** Well --  
 18 **MR. OLEEN:** Like a new diversion  
 19 under the Kansas Water Appropriation Act?  
 20 **PRESIDING OFFICER:** Well, Mr. Romero  
 21 testified in his opinion earlier, as I  
 22 understand it, in however he means the  
 23 term. I took that to mean, whether he used  
 24 the word new or additional, would that  
 25 be --

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1 **A. Yes.**  
 2 **PRESIDING OFFICER:** -- equivalent?  
 3 So if I understand this right, figure 4  
 4 shows the additional amount of water that  
 5 could be diverted under the new minimum  
 6 index levels?  
 7 **A. Yes.**  
 8 **PRESIDING OFFICER:** Okay. Does that  
 9 help?  
 10 **MR. OLEEN:** Yes, thank you, I  
 11 withdraw the objection.  
 12 **BY MR. STUCKY:**  
 13 Q. Let's move on. You describe how the water  
 14 budget analysis changes when the City wells are  
 15 pumped in the context of the native 40,000  
 16 acre-feet of credits and the ASR credits, right,  
 17 that's what we just covered?  
 18 **A. We just covered that yes.**  
 19 Q. You described that pumping the wells is balanced  
 20 by water removed from the aquifer and depleted  
 21 from the river flow; is that right?  
 22 **A. Yes.**  
 23 Q. What are the implications, then, of these -- of  
 24 these findings? Would you agree with me that  
 25 79,500 acre-feet would then be available for

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1 additional withdrawal by the City in the form of  
 2 recharge credits if we're to lower from the  
 3 current minimum index level to the new minimum  
 4 index level?  
 5 **A. Yes.**  
 6 Q. And in other words, based on where we're at with  
 7 the 1993 levels, essentially the City could --  
 8 does your analysis help support that if we  
 9 assume the City pumps all their 40,000 acre-feet  
 10 of credits during an eight-year drought that  
 11 currently they'd be able to withdraw about  
 12 14,900 acre-feet of recharge credits?  
 13 **A. Yes, and that's from figure 3. If they were**  
 14 **just lowered to the current index level, yes.**  
 15 Q. Okay. So combined 79,500 acre-feet plus  
 16 14,900 acre-feet, that's, I'm adding it up  
 17 quickly, I think that adds up to, what,  
 18 94,400 acre-feet?  
 19 **A. 94,400 acre-feet, yes, of credit water diverted.**  
 20 Q. You were in the room when Mr. McCormick  
 21 testified that this idea of a cap of 120,000  
 22 acre-feet was based on this concept that that's  
 23 the available storage space in the basin storage  
 24 area, were you not?  
 25 **A. I was not in the room.**

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1 Q. Okay. Let me ask you this: You looked at that  
 2 part of the McCormick testimony because we  
 3 showed that part of the testimony to you and you  
 4 now understand that to be his testimony; is that  
 5 right?  
 6 **A. I understand that to be his testimony.**  
 7 Q. But although Mr. McCormick said, yeah, we just  
 8 came up with 120,000 acre-foot cap based on the  
 9 fact that we thought that was the available  
 10 space in the aquifer, he, and I'll just proffer  
 11 for you, also testified that he didn't do any  
 12 analysis to determine if that was the available  
 13 space. You didn't see any analysis performed by  
 14 the City where they came up with numbers that  
 15 indicated that 120,000 acre-feet of water was  
 16 the available space, you didn't see that  
 17 analysis performed, right?  
 18 **A. The --**  
 19 Q. By the City?  
 20 **A. Not by the City.**  
 21 Q. But on the other hand, if we start with the 1998  
 22 levels, what your analysis is showing us is that  
 23 the available space in the aquifer is actually  
 24 closer to the tune of 94,400 acre-feet; is that  
 25 right?

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1 **A. If -- if you divert the 40,000 acre-feet per**  
 2 **year first every year, yes.**  
 3 Q. If we're to divert the 40,000 acre-feet of water  
 4 each year first, that leaves additional  
 5 available space of 94,400 acre-feet; is that  
 6 right?  
 7 **A. Available water, yeah.**  
 8 Q. So -- and, again, just -- this answer is so  
 9 obvious but it's already been stated on the  
 10 record anyway, this available water, that's  
 11 water that's not only available potential --  
 12 well, the City's already pumped their 40,000  
 13 acre-feet of credits so this water that's still  
 14 available, that could be water that could be  
 15 used by other users in the basin storage area;  
 16 is that right?  
 17 **A. Which water could be?**  
 18 Q. That remaining 94,400 acre-feet, that's water  
 19 that would be available for appropriations by  
 20 not only the City of Wichita but other users in  
 21 the Equus Beds well field; is that right?  
 22 **A. It's -- if the City didn't divert it, it would**  
 23 **be available for others.**  
 24 Q. Yeah, that's my question.  
 25 **A. Yeah.**

1 Q. I wasn't -- I wasn't trying to trick you,  
2 Mr. Romero.  
3 **A. I was just thinking about the model simulation,**  
4 **the way that it's run, for a moment there.**  
5 Q. Okay.  
6 **A. Yeah.**  
7 Q. So, Mr. Romero, if we start with the 1998 levels  
8 and we assume, for example, that the City is to  
9 pump all their native rights consistent --  
10 consistent with what they show in table 2-5 of  
11 their proposal, are you telling me that even if  
12 we drop the bottoms to these new levels, there  
13 wouldn't be 120,000 acre-feet of space available  
14 to -- to accumulate these credits?  
15 **A. The accounting model is coming up with less,**  
16 **yeah.**  
17 Q. So at a bare minimum, if we're to cap the  
18 physical recharge credits or the ASR II credits  
19 that are accumulated by the City, would you  
20 agree with me that something closer -- if we're  
21 just looking at available space in the aquifer  
22 that's not already been diverted by the City,  
23 would you agree with me that the cap would be  
24 something closer to 94,400 acre-feet?  
25 **A. With the assumptions that I've made, yes.**

1 **on figure 4, the rivers are losing about 10 cfs**  
2 **of water. And I just assumed that half of that**  
3 **was coming from the Little Arkansas and half of**  
4 **that was coming from the Arkansas.**  
5 **And then I looked at MDS flows on the**  
6 **Little Arkansas at Valley Center. And figure 5**  
7 **has -- it's a chart that has three curves. It's**  
8 **showing -- the very top horizontal axis shows**  
9 **that this is years 2011 and 2012, so it's the**  
10 **drought period of 2011 and 2012. The gray line**  
11 **that's indicated is actual flow that was**  
12 **observed at the gage at Valley Center during**  
13 **that drought period. The blue curve is taking**  
14 **that data and making it into a duration curve.**  
15 **A duration curve is just taking the data and**  
16 **sorting it from largest flow to smallest flow**  
17 **and then plotting it as a percentage of time**  
18 **that flow is exceeded.**  
19 **So what this actually shows is if you look**  
20 **at the blue curve and you go to the very bottom**  
21 **at the .5, which is a fraction, .5 being half**  
22 **the time in those two years, the blue curve**  
23 **actually is at about 20 cfs; if you look at the**  
24 **vertical axis, it's right near the 20. 20 cfs**  
25 **happens to be the minimum desirable streamflow.**

1 Q. So based on those assumptions, a 120,000  
2 acre-foot number wouldn't even be feasible; is  
3 that right?  
4 **A. With those assumptions and considering that this**  
5 **is the accounting model, you would come -- you'd**  
6 **come up with a different number, with the**  
7 **assumptions that I made.**  
8 Q. All right. Mr. Romero, you talked in your  
9 expert report about the impacts to rivers, and  
10 we've already touched on that a little bit  
11 with -- well, actually quite a bit with respect  
12 to dropping the minimum index level. Let's now  
13 turn to figure 5. What does figure 5 show us?  
14 **A. Okay. I'll just refer to figure 4 quickly**  
15 **first. Figure 4 shows that when you lower the**  
16 **water -- when you lower the minimum index level**  
17 **and divert the water from the current index**  
18 **level to the proposed index level, then figure 4**  
19 **shows the blue area, that's water that comes**  
20 **from the Little Arkansas and the Arkansas**  
21 **Rivers. Figure 5 shows that -- oh, and I'm**  
22 **sorry, let me say also on figure 4, it shows**  
23 **that after eight years that the river loses**  
24 **about -- both rivers lose about 10 cfs of water.**  
25 **So after the eight-year simulation that's shown**

1 **So what that blue curve shows is that at the**  
2 **gage at Valley Center, the minimum desirable**  
3 **streamflow was exceeded about half the time.**  
4 **And the other half of the time the flow was less**  
5 **than 20 cfs.**  
6 **So then there's an orange curve that**  
7 **reduces that duration curve by 5 cfs. Well, 5**  
8 **cfs is what I'm estimating the depletion is to**  
9 **the Arkansas River based on the scenario where**  
10 **you lower water levels to the proposed minimum**  
11 **index level. And then what it does is it**  
12 **actually changes that curve a little bit, so**  
13 **under the drought the MDS flow at Valley Center**  
14 **is exceeded about half the time. If you lower**  
15 **water levels to the proposed minimum index**  
16 **level, it gets exceeded more of the time, about**  
17 **one month more.**  
18 Q. Okay. And so that's -- that's part of what this  
19 figure 5 is showing us that if we're to drop the  
20 minimum index level, we -- we will have a  
21 greater effect of MDS, at least one additional  
22 month out of the year; is that right?  
23 **A. Yes. Out of the two years.**  
24 Q. And, you know, you highlighted something that I  
25 should have pointed out, Mr. Romero. Based on

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1 the current -- there's a difference between  
 2 lowering impacts to MDS and minimum desirable  
 3 streamflow and river depletion, there's a  
 4 distinction between those two; is that right?  
 5 **A. I'm sorry, a distinction between what two**  
 6 **things?**  
 7 Q. A distinction between minimum desirable  
 8 streamflow as far as that terminology is used  
 9 and acre-feet of river depletion; is that right?  
 10 **A. Yes.**  
 11 Q. In other words, river levels versus the total  
 12 acre-feet of depletion?  
 13 **A. Yes.**  
 14 Q. And I should have pointed that out, let's go  
 15 back to figure 3 real quick. Figure 3 shows the  
 16 impacts of the City's proposal if we keep the  
 17 current minimum index level?  
 18 **A. Uh-huh.**  
 19 Q. And it shows in the first year there is some  
 20 impact to minimum desirable streamflow, tell me  
 21 roughly, is that, what, about 4 cfs, a lowering  
 22 of 4 cfs in the first year and maybe a lowering  
 23 to about, I don't know, 3 to 5 cfs in the second  
 24 year, is that what that's telling me?  
 25 **A. Yes.**

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1 Q. Okay. And, in fact, we can show, as we look at  
 2 that vertical axis and that blue line, we can  
 3 show -- we can see visually or graphically, and  
 4 I understand that your data could outline it in  
 5 much greater detail, but we can see graphically  
 6 the reduction in the cubic feet per second of  
 7 river flow as shown on this chart; is that  
 8 right?  
 9 **A. Yes.**  
 10 Q. Now, let's turn back to figure 4, contrast --  
 11 hold those thoughts. Contrast what you showed  
 12 in figure 3 with that shown in figure 4. In --  
 13 well, and I should have just asked for a clear  
 14 record. In figure 3, in that first year of  
 15 depletion, what is the lowering of the cfs of  
 16 the river?  
 17 **A. In figure 3?**  
 18 Q. Yeah, in figure 3, after the first year?  
 19 **A. It's 3 or 4 cfs.**  
 20 Q. And in the second year, what is it?  
 21 **A. About the same.**  
 22 Q. And figure 4, then, what is the lowering of cfs  
 23 in that first year as shown in figure 4?  
 24 **A. It's a little more, maybe -- maybe 4 or 5 cfs.**  
 25 Q. And year two, what does that go to, would you

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1 say 7 or 8 just looking at this?  
 2 **A. Yeah, about that.**  
 3 Q. Now, let's say we jump all the way to year five,  
 4 for example, when we lower the minimum index  
 5 level, it looks to me like we're now talking  
 6 greater than 10 cfs most likely at that point as  
 7 far as the lowering of the river level?  
 8 **A. I think we're approaching 10. I think by the**  
 9 **time you get to year eight, it's at about 10.**  
 10 Q. Okay. And if we flip back to figure 3, let's  
 11 look at year five where we are with the lowering  
 12 of the cfs of the river levels in year five. In  
 13 year five, we're still at, and I have to squint  
 14 to look, that looks like maybe 3 or 4 cfs of  
 15 lowering --  
 16 **A. Around.**  
 17 Q. -- in year five?  
 18 **A. About that, yeah.**  
 19 Q. So the difference between minimum desirable  
 20 streamflow, or cfs as you have it in this chart,  
 21 based on the current minimum index level versus  
 22 lowering to the new minimum index level, we're  
 23 talking about a pretty significant drop in  
 24 minimum desirable streamflow, or cfs as shown in  
 25 your figures; is that true?

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1 **A. I'd say on the order of, you know, 7 or 8 cfs.**  
 2 Q. Well, and in some cases, would you agree with me  
 3 that the impacts to cfs would be double or even  
 4 triple if we lower the minimum index level?  
 5 **A. About triple.**  
 6 Q. Now, let's go back to figure 5. I apologize to  
 7 you, Mr. Romero, I interrupt -- interrupted some  
 8 of your trains of analysis and your thoughts on  
 9 figure 5 as I jumped back to that other point,  
 10 and I apologize for that but I thought it would  
 11 help to explain what those tables show for the  
 12 record. Go back to your analysis on figure 5,  
 13 what is figure 5 showing us?  
 14 **A. Yeah, it's a -- you know, I talked about it**  
 15 **already, and there are a lot of curves on there**  
 16 **and there's some analysis, but the upshot is**  
 17 **that there are two duration curves, a blue**  
 18 **curve, which is the observed flow in years 2011**  
 19 **and 2012, and it shows that about half the time**  
 20 **the minimum desirable streamflow is exceeded,**  
 21 **about half the time it's not. But if you were**  
 22 **to lower water levels to the proposed minimum**  
 23 **index level, then there'll be -- there'll be**  
 24 **more days that you will not meet your minimum**  
 25 **desirable streamflow, and there'll be more days**

1 to the tune of about a month.  
2 Q. And would that also support your analysis  
3 essentially that there would be a new  
4 appropriation or a new diversion?  
5 **A. I see it as a new diversion, it's something that**  
6 **the City is not permitted to do; but if the**  
7 **proposal was approved, then they'll be able to**  
8 **do it.**  
9 Q. Okay. So as far as impact to the MDS flow at  
10 the Valley Center gage as shown in figure 5,  
11 under the old minimum index level, contrast for  
12 me the differences in MDS as shown on figure 5  
13 based on the old minimum index level versus the  
14 new minimum index level.  
15 **A. Figure 5 actually is not quantifying an effect**  
16 **from the current minimum index level. It's just**  
17 **quantifying an effect if you're allowed to**  
18 **divert from the current to the proposed. So**  
19 **it's really kind of like an applied for**  
20 **analysis. You're applying to do something,**  
21 **you're proposing to do something, and it's just**  
22 **characterizing what you would be allowed to do.**  
23 **Or what the effect would be if you actually went**  
24 **ahead and lowered levels to the proposed minimum**  
25 **index level.**

1 **infer that there'd be an effect from going to**  
2 **the current index level too if you diverted that**  
3 **credit.**  
4 Q. So, Mr. Romero, to sum up this part of your  
5 analysis, based on your expert analysis and  
6 based on the thousands of pages of model files  
7 and documents and inputs that you reviewed in  
8 exchange with Mr. McCormick and based on all the  
9 experience you have and the education you have,  
10 is it your expert opinion that lowering the  
11 minimum index level to a new minimum index level  
12 will have the effect of adversely impacting  
13 minimum desirable streamflow?  
14 **A. There'll be more days that you do not meet it,**  
15 **so if you consider that adverse, yes.**  
16 Q. You mentioned before to me that the model  
17 assumes that the river is -- won't dry out, the  
18 modeling performed by the City assumes that the  
19 river will not dry out; is that -- is that true?  
20 **A. Yes, that's something that's described in my**  
21 **report. The way the model rivers are set up,**  
22 **they're set up so that they always have flow in**  
23 **them. During -- during the drought of 2011 and**  
24 **2012, there's gage flow on the Arkansas and the**  
25 **Little Arkansas that shows -- that shows that**

1 I think the question is what happens if you  
2 actually lower the basin? Well, this says that  
3 at Valley Center, based on the assumptions that  
4 I've made here, you won't satisfy minimum  
5 desirable streamflows for about an extra month  
6 if you consider it in the period of the drought  
7 here. Taking all the assumptions that are in  
8 there, the 1 percent drought, the starting head  
9 condition, the diverting the water right before  
10 diverting credit, all those factors.  
11 Q. But figure 5 does help to show the impacts to  
12 minimum desirable streamflow on the Little  
13 Arkansas River; is that right?  
14 **A. It does. You know, I think that one thing that**  
15 **we could see, if we're just talking about**  
16 **credit, figure 3 shows the amount of credit that**  
17 **you divert based on the current index level and**  
18 **that's -- you know, the effect is on the order**  
19 **of a few cfs to both rivers. If I split that in**  
20 **half, I could say maybe it's about a cfs of**  
21 **effect. That would have an effect on minimum**  
22 **desirable streamflow too. It'd be less than a**  
23 **month, but -- but that -- I'm not showing it,**  
24 **but based on what I've shown on figure 5 for**  
25 **going to the proposed minimum index level, I can**

1 **on -- on the Little Arkansas, flow was less than**  
2 **1 cfs about 30 percent of the time.**  
3 Q. Let's turn to figure 69 of your -- Exhibit 69,  
4 I'm sorry, that you included along with your  
5 expert report.  
6 **A. Okay.**  
7 Q. Does Exhibit 69 help to tell some of that story?  
8 **A. It does.**  
9 Q. Tell me what Exhibit 69 tells us.  
10 **A. Exhibit 69, the first page is a map showing two**  
11 **gages; one gage is on the Little Arkansas at**  
12 **Halstead, and the other gage is on the Arkansas**  
13 **near Maize.**  
14 Q. And this is showing us the gages during the time  
15 period in 2011 and 2012. Is that a true  
16 statement?  
17 **A. Yeah, that's what pages 2 and 3 of the exhibit**  
18 **show, yes.**  
19 Q. What do -- do these two pages, do they tell us  
20 essentially based on this graphical depiction,  
21 visual depiction of these hydrographs, does it  
22 indicate to us that the river dried up in 2011  
23 and 2012?  
24 **A. The Little Arkansas, the river was dry about**  
25 **15 percent of the time during the years 2011 and**

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1 **2012. And flow was less than 1 cfs about**  
 2 **30 percent of the time.**  
 3 Q. Wait a minute, so you're telling me that the  
 4 City's modeling doesn't account for a condition  
 5 that existed between 2011 and 2012 about  
 6 15 percent of the time?  
 7 **A. Yes, the model doesn't account for the river**  
 8 **drying up.**  
 9 Q. Yesterday you were in the room when -- when, and  
 10 I'm -- yeah, when Mr., and I guess it was  
 11 actually today also, you were in the room when  
 12 Mr. Boese testified; is that right?  
 13 **A. Yes.**  
 14 Q. Do you recall Mr. Boese showing some photographs  
 15 from back in 2012 showing that the river, the  
 16 Little Arkansas River and the Big Arkansas River  
 17 dried up?  
 18 **A. I do.**  
 19 Q. So is that what we're talking about as shown in  
 20 a much more technical sense in these hydrographs  
 21 in Exhibit 69?  
 22 **A. Yes, on the second page, I'm -- I'm actually**  
 23 **talking about gage data. So on the Little**  
 24 **Arkansas near Halstead, it was dry 15 percent of**  
 25 **the time. On the Arkansas near Maize, it did**

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1 **not dry out; it got down to about 3 cfs, but it**  
 2 **never dried out.**  
 3 Q. So the City's modeling just assumes that the  
 4 river is not going to dry up. Is that -- is  
 5 that a true statement?  
 6 **A. It does. It comes from the USGS model. The way**  
 7 **that the USGS set it up, it doesn't allow rivers**  
 8 **to dry out. So there's a section in my report,**  
 9 **on page 7 of my report where -- where I describe**  
 10 **surface water availability. And earlier we**  
 11 **talked about the water budget analysis, you**  
 12 **might remember we were talking about that, and**  
 13 **when the City pumps its water right, in the**  
 14 **first year depletion to the river is about -- is**  
 15 **about 10 cfs, and in the second year depletion**  
 16 **to the river is about 20 cfs. So in that first**  
 17 **year of pumping, there's 10 cfs depletion to the**  
 18 **rivers. And the river, the Little Arkansas is**  
 19 **showing that about 30 percent of the time -- I'm**  
 20 **sorry. The Little Arkansas shows that flow in**  
 21 **the river was less than 1 cfs about 30 percent**  
 22 **of the time and that flow on the Arkansas was**  
 23 **less than 10 cfs over 20 percent of the time.**  
 24 **So the magnitude of flow in the river is**  
 25 **comparable to the amount of depletion that City**

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1 **pumping can cause. So I just made a suggestion**  
 2 **or recommendation that the way the rivers are**  
 3 **modeled could be improved to actually account**  
 4 **for dry rivers because it can -- it can affect**  
 5 **the accounting.**  
 6 Q. Mr. Romero, are you familiar with how the City  
 7 came up with their drought modeling in the sense  
 8 that they simply took the years 2011 and 2012  
 9 and replicated those effects or extrapolated  
 10 them over the course of eight years, are you  
 11 familiar with that?  
 12 **A. I am familiar with that.**  
 13 Q. Would you agree with me that if we're truly in  
 14 an eight-year drought, we're truly in a  
 15 situation where the drought persists and it  
 16 continues year after year during the course of  
 17 eight years, there could be the potential for  
 18 these rivers to dry up more than 15 percent of  
 19 the time in those later years?  
 20 **A. There could -- there's that potential, yeah.**  
 21 Q. In fact, would you say it's probable, depending  
 22 on the nature of the drought?  
 23 **A. Not without assessing the probability.**  
 24 Q. Okay. So that's something -- is that something  
 25 that you believe should -- that there should be

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1 more research and analysis with regard to that  
 2 issue?  
 3 **A. I think -- it looks to me like the City has done**  
 4 **a lot of analysis with regard to a drought.**  
 5 Q. But would you agree with me that the City could  
 6 do more analysis to determine how often the  
 7 river would dry up during their modeled  
 8 eight-year drought and the hydrologic effects of  
 9 the river drying out?  
 10 **A. I think the hydrologic effects of the river**  
 11 **drying out, I think some more work could be done**  
 12 **on that. And you could even do a sensitivity**  
 13 **analysis where you just simulate some -- remove**  
 14 **some river cells during some periods and see how**  
 15 **much that changes the accounting. Just kind of**  
 16 **a sensitivity analysis to see if it**  
 17 **significantly affects your accounting. It may**  
 18 **not significantly affect it, but I think it's**  
 19 **worth exploring just to help be comprehensive**  
 20 **with the accounting.**  
 21 Q. Okay. Mr. McCormick talked a little bit about  
 22 how difficult it would be to account for the  
 23 rivers drying up, but, Mr. Romero, you've helped  
 24 write a lot more models than Mr. McCormick has.  
 25 Based on your expert opinion, is it possible to

1 perform this sensitivity analysis that you  
2 described?  
3 **A. Yes. Yeah.**  
4 Q. And, in fact, is that something that someone  
5 with your credentials and qualifications could  
6 be asked to do?  
7 **A. Yes. Yeah.**  
8 Q. If we were to hire you, if, for example,  
9 Ms. Owen said, I'm going to order that  
10 sensitivity analysis to be performed, I want to  
11 understand what's going to happen during a  
12 drought if the river dries up and what that  
13 hydrologic effect is going to be, would you be  
14 able to perform that analysis if you were  
15 ordered to do so?  
16 **A. I could, yeah.**  
17 Q. And so even if the City and their experts are  
18 unable to perform that analysis, if that's a  
19 condition or requirement that Ms. Owen comes up  
20 with, you'd be able to do so?  
21 **A. I could do that, yeah.**  
22 Q. Turn to Exhibit 69, please.  
23 **A. Okay.**  
24 Q. Do you recall your statement that river  
25 depletion is 10 cfs in year one and 20 cfs in

1 **A. I recommend it. I -- I think it's good when**  
2 **you're doing this kind of accounting to consider**  
3 **some of those factors.**  
4 Q. Move on to a different point, Mr. Romero. Could  
5 you turn with me to Exhibit -- figure 17 in  
6 Exhibit 46? Earlier, you indicated, Mr. Romero,  
7 this concept of layering as it related to the  
8 zones in the aquifer as used in the USGS model,  
9 and you talked -- you said something about layer  
10 1 and layer 2 with regard to a deep zone. What  
11 does figure 17 show us or explain to us with  
12 respect to your concept of layering?  
13 **A. Oh, my gosh, it was in front of me.**  
14 Q. It's on page 27 for the record.  
15 **A. Can you say the page number again?**  
16 Q. Page 27.  
17 **A. Let's see.**  
18 **MR. STUCKY:** May I approach the  
19 witness?  
20 **PRESIDING OFFICER:** Yes.  
21 **A. Okay. I've got it now.**  
22 **BY MR. STUCKY:**  
23 Q. Just tell me briefly -- briefly for our purposes  
24 what figure 17 tells us to help explain your  
25 conclusion that merely all the USGS model does

1 year two when the City diverts its native water  
2 rights at the rate of 40 acre-feet per year?  
3 **A. 40,000 acre-feet?**  
4 Q. 40,000 acre-feet per year?  
5 **A. Yes.**  
6 Q. Okay. How does that relate to the figures in  
7 the hydrographs shown in Exhibit 69?  
8 **A. It's just that those depletion quantities are**  
9 **compatible with the flow that's observed in the**  
10 **river, you know, 20 to 30 percent of the time.**  
11 **At --**  
12 Q. If you were -- oh, sorry.  
13 **A. That's at the Little Arkansas -- Little Arkansas**  
14 **at Halstead, and it's compatible with the flow**  
15 **observed maybe 20 percent of the time at the**  
16 **Arkansas near Maize.**  
17 Q. And I think you answered this in your expert  
18 report and you may have indirectly stated it  
19 already, but it's your official expert opinion  
20 based on having analyzed hundreds of models and  
21 having personally written or helped write in  
22 excess of 30 models, it's your official expert  
23 opinion that the City should conduct some  
24 sensitivity analysis to account for conditions  
25 when the river dries up; is that true?

1 is come up with zones or layers to show depth of  
2 bedrock in the aquifer.  
3 **A. This is a graphical depiction of information**  
4 **that went into how the USGS describes that they**  
5 **came up with model layers. The model has three**  
6 **layers. And they describe that they looked at**  
7 **lithologic data, and they found that there's**  
8 **some low -- lower permeability sediments that**  
9 **they use to define the difference between layer**  
10 **1 and layer 2. And so what we're looking at on**  
11 **figure 17 is actually all the lithologic logs**  
12 **that went into developing the model.**  
13 Q. And figure 18 and figure 19 help to support this  
14 concept of layers that in other words,  
15 they're -- this concept of what the depth to  
16 bedrock was is a composite or an aggregate of  
17 some of this information; is that right?  
18 **A. That's right. And this lithologic data that**  
19 **they reviewed, they actually broke it into**  
20 **categories. Category 1 is a clay, category 2 is**  
21 **a silt, category 3 is a sand, and category 4 is**  
22 **a gravel. So when you look at figure 18, it has**  
23 **green tones that vary -- the tone, color tones**  
24 **that vary from green to red, and the green**  
25 **indicates a 1, or a clay, and the red indicates**

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1 a gravel. And an orange indicates a sand.  
 2 So the model layers are -- the way the  
 3 model layers were constructed and the way that  
 4 aquifer properties were set up in the model  
 5 considers variability in lithology; it considers  
 6 some clays, some sands -- clays, silts, sands,  
 7 and gravels. And each layer takes -- takes  
 8 these categories and averages them into a  
 9 composite in each layer.  
 10 Q. But in doing so, the model doesn't -- you heard  
 11 the discussion of practical saturated thickness;  
 12 is that right?  
 13 A. I did.  
 14 Q. So in doing so, because it's just an aggregate,  
 15 the model doesn't actually come up with a  
 16 concept of practical saturated thickness. Is  
 17 that a true statement?  
 18 MR. OLEEN: I'm sorry, I'm objecting  
 19 because I can't remember whether we  
 20 resolved the last objection over this  
 21 witness testifying to that concept. I  
 22 remember we -- there was an objection, I  
 23 believe Mr. McLeod objected to this witness  
 24 testifying about practical saturated  
 25 thickness, Mr. Stucky said he would wait

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1 and address that objection at a later time.  
 2 Am I misunderstanding?  
 3 MR. STUCKY: I'll just let you rule.  
 4 PRESIDING OFFICER: I -- I had  
 5 forgotten. So your objection is based on?  
 6 MR. OLEEN: This witness's expert  
 7 report didn't indicate that he was going to  
 8 discuss this concept. We had the similar  
 9 objection with Mr. Boese because his expert  
 10 report didn't discuss the concept and felt  
 11 that it would be outside the scope of this  
 12 expert witness's anticipated testimony as  
 13 provided to the other parties.  
 14 MR. STUCKY: And for Mr. Oleen's  
 15 benefit, I'll move on for now and we can  
 16 come back to that later.  
 17 PRESIDING OFFICER: Okay, that's  
 18 fine.  
 19 MR. STUCKY: I'll save you having to  
 20 rule on that issue.  
 21 MR. OLEEN: And I'll try to remember  
 22 once again when you do go back to it.  
 23 MR. STUCKY: All right.  
 24 BY MR. STUCKY:  
 25 Q. Let's move on to the impact to individual wells

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1 based on the City's lowering of the minimum  
 2 index levels in conjunction with their drought  
 3 modeling. You understand where I'm going,  
 4 Mr. Romero?  
 5 A. I do.  
 6 Q. Mr. Romero, turn to figure 6 of your expert  
 7 report. What is figure 6 showing me?  
 8 A. Okay. So we just talked about impacts to rivers  
 9 and how that affected minimum desirable  
 10 streamflows, and that related to the blue areas  
 11 on the charts that we talked about earlier. Now  
 12 we're going to talk about the gray areas on  
 13 those budget charts.  
 14 The gray areas were representing water that  
 15 was removed from the aquifer. But those budget  
 16 charts on figures 2, 3, and 4 just tell you the  
 17 total volume. When you get to figure 6 here,  
 18 we're actually seeing where the volume is  
 19 removed. So what we're seeing is the chart is  
 20 laid out with -- or the map is laid out here  
 21 with three -- three columns. The first column  
 22 is scenario A, the middle one is scenario B, and  
 23 the third one to the right is scenario C.  
 24 Q. So these are essentially the same three  
 25 scenarios that you outlined before?

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1 A. Yes. So scenario A represents the City pumping  
 2 its native water right of 40,000 acre-feet per  
 3 year for eight years. And so to the very left  
 4 under scenario A, there's a deep zone and a  
 5 water table. The deep zone is model layer 2,  
 6 the water table is model layer 1. And it's  
 7 actually showing that the drawdown caused --  
 8 when the City pumps its water right, it's pretty  
 9 comparable in the shallow and deep zones, that's  
 10 the case that we're seeing in the -- in the  
 11 simulations here. So these contours actually  
 12 show -- the contours go up to about 20 feet of  
 13 drawdown caused by the City pumping its native  
 14 water right for eight years during the drought  
 15 scenario. So it's just a depiction of drawdown  
 16 contours from scenario A.  
 17 And if you go to scenario B, you don't  
 18 really see contours. If you look, you'll see a  
 19 little -- a few little red dots that are there;  
 20 it's just because there isn't that much drawdown  
 21 that happens in scenario B 'cause there isn't  
 22 that much water removed if the City were to  
 23 lower its water level to the current minimum  
 24 index level after diverting the water right  
 25 first.



1 **And then scenario C is a breakout of what**  
2 **I'm calling a new diversion. If the City were**  
3 **to lower water levels down to the proposed**  
4 **minimum index level, you see up to -- the**  
5 **contours go up to about 5 feet more of drawdown**  
6 **that occurs. So this is a breakdown within the**  
7 **basin storage area of water level changes that**  
8 **occur under those three scenarios that I**  
9 **simulated.**

10 Q. Now, let's turn to figure 7, if you will,  
11 Mr. Romero.

12 **PRESIDING OFFICER:** Five minutes.

13 **MR. STUCKY:** Okay, yeah.

14 **BY MR. STUCKY:**

15 Q. Now, let's turn to figure 7, if you will,  
16 Mr. Romero.

17 **A. So figure 7 is the cumulative drawdown from the**  
18 **three scenarios that we saw in figure 6. So it**  
19 **includes all the drawdown, it includes the**  
20 **drawdown that occurred from the City pumping its**  
21 **water right, plus the drawdown from lowering to**  
22 **the current minimum index level, plus the**  
23 **drawdown from going to the proposed minimum**  
24 **index level.**

25 **And you can see on the map here on figure**

1 **7, one thing that I found was if the City were**  
2 **to lower water levels to its proposed minimum**  
3 **index level, then 35 wells would have potential**  
4 **to lose their well water column, 35 wells in the**  
5 **area. Out of those 35 wells, 29 of them would**  
6 **lose their water column from the City pumping**  
7 **its water right of 40,000 acre-feet per year and**  
8 **an additional six would lose their water column**  
9 **if the City were to lower to the proposed**  
10 **minimum index level.**

11 Q. Now, these results are based on well information  
12 that you obtained from KGS essentially; is that  
13 right?

14 **A. Yes, from KGS and also set of well data that was**  
15 **provided by Wendling Law, from the Intervenors.**

16 Q. So in other words, with the City's current  
17 minimum index level, if the City pumps all of  
18 their native rights, there's the potential for  
19 29 wells to go dry currently; is that right?

20 **A. Yes.**

21 Q. And if the City lowers the minimum index level,  
22 just based on how far down these wells are  
23 drilled, there would be the potential for  
24 another six wells in that area to go dry; is  
25 that right?

1 **A. Based on the assumptions that I made that are --**  
2 **that are similar to the 1 percent drought**  
3 **scenario, yeah.**

4 Q. Would you agree with me, though, that the wells  
5 you considered, these 35 wells, you only  
6 considered 35 wells, right, Mr. Romero?

7 **A. Yes.**

8 Q. Would you agree with me that there's much  
9 more -- there's many more wells in this area  
10 than what you analyzed; is that right?

11 **MR. MCLEOD:** I'm going to ask for  
12 foundation on that.

13 **MR. STUCKY:** I just asked the  
14 question for the foundation.

15 **A. I just need one moment. Okay. So I accessed**  
16 **data from the Kansas Geological Survey, and it**  
17 **was data from the water well completion records,**  
18 **or the WWC-5 database. And that database, it's**  
19 **actually on page 8 of my report, footnote 5,**  
20 **that database contains information that started**  
21 **being compiled since 1975, because in 1975**  
22 **drilling companies were mandated by state**  
23 **legislation to provide well information that**  
24 **typically includes well depth and a static**  
25 **depth. So I accessed the database that has**

1 **records that I would anticipate beginning in**  
2 **1975, so any wells that were drilled before**  
3 **that, I would -- would not expect them to be in**  
4 **the database.**

1 **records that I would anticipate beginning in**  
2 **1975, so any wells that were drilled before**  
3 **that, I would -- would not expect them to be in**  
4 **the database.**

5 **BY MR. STUCKY:**

6 Q. And so based on that -- you know, based on that,  
7 I think it stands to reason, then, that this is  
8 far from an exhaustive list of the wells in that  
9 area; is that correct?

10 **A. Considering since '75, I would suspect that,**  
11 **yeah, not exhaustive.**

12 Q. And this conclusion that six additional wells  
13 are going to lose their water column, that's  
14 based on looking at how far down those wells are  
15 drilled; is that right?

16 **A. Yes. I actually subtracted 10 feet from their**  
17 **depth because I wanted to leave some room for**  
18 **pump submergence, which is actually kind of a**  
19 **minimum amount, 10 feet isn't that much, but**  
20 **that may be enough.**

21 **MR. MCLEOD:** I think we have gone  
22 slightly past 3:00, if this is a good spot  
23 for a break.

24 **MR. STUCKY:** I say 2:59, I set a  
25 timer when you told me five minutes.

1 **PRESIDING OFFICER:** Go, go.  
 2 **BY MR. STUCKY:**  
 3 Q. Mr. Romero, would you agree with me that simply  
 4 drilling down -- well, if we define impairment  
 5 by the amount -- by the fact that water wells  
 6 lose their water column -- that the wells are  
 7 going to lose their water column based on  
 8 lowering the minimum index level, if we define  
 9 impairment in that way --  
 10 **MR. MCLEOD:** I'm going to object to  
 11 that without a showing that that's the  
 12 Kansas definition of impairment.  
 13 **PRESIDING OFFICER:** He hasn't  
 14 finished asking the question.  
 15 **BY MR. STUCKY:**  
 16 Q. Mr. Romero, if we define impairment in the sense  
 17 of wells losing their water column, would you  
 18 agree with me, then, that impairment would occur  
 19 based on dropping to a new index level?  
 20 **MR. OLEEN:** I join in the objection  
 21 because I don't think that's the definition  
 22 of impairment under Kansas water law.  
 23 **MR. STUCKY:** And they're -- they are  
 24 certainly free to cross. I phrased my  
 25 question, I think, in a clear manner.

1 **PRESIDING OFFICER:** Yeah, he  
 2 clarified if that was how impairment was  
 3 defined. So you can answer.  
 4 **A. If that's how impairment is defined, I agree.**  
 5 **MR. STUCKY:** It is now, I show five  
 6 minutes and 5 seconds, I'm prepared to stop  
 7 based on when you gave my warning so ...  
 8 **PRESIDING OFFICER:** Okay. It's  
 9 3:00 o'clock, we are required to stop, so  
 10 we will resume at 8:30 tomorrow morning.  
 11 Thank you.  
 12 (Whereupon, the proceedings were  
 13 adjourned at 3:03 p.m.)  
 14  
 15  
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 25

1 C E R T I F I C A T E  
 2 STATE OF KANSAS )  
 3 SEDGWICK COUNTY ) ss:  
 4 I, Nancy L. Rambo, a Certified Shorthand  
 5 Reporter, within and for the State of Kansas, do  
 6 hereby certify that the foregoing is a true and  
 7 correct transcript of the proceedings had at the  
 8 time and place hereinbefore set forth.  
 9 I further certify that I am not a relative  
 10 or employee or attorney or counsel of any of the  
 11 parties, nor am I a relative or employee of such  
 12 attorney or counsel, nor am I financially  
 13 interested in the action.  
 14 WITNESS my hand and official seal at  
 15 Wichita, Sedgwick County, Kansas, this 23rd day of  
 16 March, 2020.  
 17  
 18  
 19 NANCY L. RAMBO, R.P.R., C.S.R.  
 20 Registered Professional Reporter  
 21 Certified Shorthand Reporter  
 22  
 23 Costs:  
 24  
 25



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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage*

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*Formal Hearing*  
*Vol. X*  
*March 5, 2020*

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1 STATE OF KANSAS  
2 BEFORE THE DIVISION OF WATER RESOURCES  
3 KANSAS DEPARTMENT OF AGRICULTURE  
4  
5 In the Matter of the City )  
6 of Wichita's Phase II ) Case No.  
7 Aquifer Storage and ) 18 WATER 14014  
8 Recovery Project in Harvey )  
9 and Sedgwick Counties, )  
10 Kansas, )  
11 Pursuant to K.S.A. 82a-1901  
12 and K.A.R. 5-14-3a  
13  
14  
15 FORMAL HEARING  
16 VOLUME X  
17  
18 This matter came on for Formal Hearing  
19 before Constance C. Owen, Presiding Officer, at  
20 the First Mennonite Church, 427 West Fourth,  
21 Halstead, Harvey County, Kansas, commencing at  
22 8:35 a.m., on the 5th day of March, 2020.  
23  
24  
25

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1 A P P E A R A N C E S  
2  
3 City of Wichita, Department of Public  
4 Works and Utilities, appears by their attorney,  
5 Brian K. McLeod, Deputy City Attorney, 435 North  
6 Main, 13th Floor, Wichita, Kansas 67202.  
7  
8 Equus Beds Groundwater Management District  
9 No. 2 appears by their attorneys, Thomas A. Adrian  
10 and David J. Stucky, Adrian & Pankratz, 301 North  
11 Main, Suite 400, Newton, Kansas 67114. Also  
12 present were Leland Rolfs and Tim Boese.  
13  
14 Division of Water Resources appears by  
15 their attorneys, Aaron B. Oleen and Stephanie  
16 Murray, Kansas Department of Agriculture, 1320  
17 Research Park Drive, Manhattan Kansas 66502.  
18  
19 Intervenors appear by their attorney,  
20 Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
21 Kansas 67056.  
22  
23  
24  
25

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1 **PRESIDING OFFICER:** Okay. We're  
2 back on the record. It's about 8:34 in the  
3 morning on March 5th, 2020. We are  
4 resuming the administrative hearing for the  
5 City of Wichita's request to modify their  
6 ASR Phase II project. And Mr. Stucky is in  
7 surgery this morning, Mr. Adrian is going  
8 to represent the District. So, Mr. Adrian,  
9 please go ahead.

10 **MR. ADRIAN:** Thank you.

11  
12 **DIRECT EXAMINATION (Cont.)**

13 **BY MR. ADRIAN:**

14 Q. Mr. Romero, when we finished -- or ended  
15 yesterday, we were talking at that point about  
16 the effect in the basin storage area of the  
17 potential withdrawal under the proposal of the  
18 City. And at that point --

19 **A. Yes.**

20 Q. -- you talked about the effect on area wells  
21 within -- within that area, and I think you  
22 referenced the requirement of the 660 feet  
23 within the -- within the withdrawal wells. You  
24 recall that conversation?

25 **A. In the conversation, we didn't talk about the**

1 **660 feet, but I was about to elaborate on that.**

2 Q. Okay. Well, then why don't you proceed and  
3 explain what your findings were with regard to  
4 that.

5 **A. We were talking about figure 7 in my report,**  
6 **which shows the drawdown from the three**  
7 **scenarios that I ran, scenarios A, B, and C. So**  
8 **it's a cumulative drawdown from those three**  
9 **scenarios. And just to refresh everyone's**  
10 **memory, scenario A is the effect from the City**  
11 **pumping its full water right of 40,000 acre-feet**  
12 **per year during the 1 percent drought; scenario**  
13 **B is lowering water levels further down to the**  
14 **current minimum index level; and scenario C is**  
15 **lowering water levels to the proposed minimum**  
16 **index level.**

17 **And figure 7 shows the resulting water**  
18 **levels from those -- the drawdown that occurs to**  
19 **water levels from those three scenarios. And**  
20 **figure 7 has -- on the map, there are some black**  
21 **circles. The black circles that are in the map**  
22 **represent domestic wells that lose their water**  
23 **column from the City pumping its 40,000**  
24 **acre-foot per year water right.**

25 **There's a legend on the lower left corner**

1 **So if you are wondering about wells that are**

2 **impacted within 660 feet or wells that lose**  
3 **their water column within 660 feet of a City**  
4 **well, it would be either a black dot or a black**  
5 **square that is located inside the red circle,**  
6 **okay?**

7 Q. Okay.

8 **A. I just want to make sure everybody understands**  
9 **that, that that red circle is the 660-foot**  
10 **buffer. So anytime that you see a black dot**  
11 **that is outside of a red circle, that means that**  
12 **is a well projected to lose its water column,**  
13 **but it's more than 660 feet away from a City**  
14 **well. So the -- this -- this regulation**  
15 **intended to offer some protection to wells that**  
16 **are near City wells, what I'm saying is the**  
17 **660 feet is not an adequate distance because**  
18 **there are wells that are further than 660 feet**  
19 **away from City wells that are projected to lose**  
20 **their water column.**

21 Q. My understanding is that these were simply  
22 samples that you were able to identify, and it  
23 is -- no way do you imply that this is an  
24 exhaustive list of all the potential wells that  
25 would be affected by the drawdown?

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1 **A. That's correct, 'cause I received the data from**  
 2 **the Kansas Geological Survey database, and that**  
 3 **database, development of that database began in**  
 4 **1975. So any wells -- any homes or areas that**  
 5 **had wells drilled before 1975 would not be**  
 6 **expected to be on that list.**  
 7 Q. So the -- the resulting need to, let's say,  
 8 withdraw -- or redrill the wells to gain water,  
 9 is there any guarantee that they will reach  
 10 water if the well is even within the 660 feet  
 11 and redrilled?  
 12 **A. It would depend on -- there is an aquifer in the**  
 13 **area; the aquifer is -- the USGS describes how**  
 14 **they came up with the layering, and in the areas**  
 15 **there are -- there are clays, silts, sands, in**  
 16 **some areas gravels. If you do drill down into**  
 17 **areas where there are clays, there -- there is a**  
 18 **question about whether or not you may be able to**  
 19 **produce enough water.**  
 20 Q. In none of the study you did nor any of the  
 21 reports that the City provided gave us any  
 22 evidence of what could be expected or the cure  
 23 for an unexpected problem; is that correct?  
 24 **A. I have not seen any information on that.**  
 25 Q. And to do that, to have any information on that,

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1 you would have to examine individual well logs  
 2 and the resulting findings from those logs such  
 3 as clay layers, depth to shale, and so on, would  
 4 you not?  
 5 **A. Yes. And I should clarify, I didn't see any**  
 6 **information provided on that. The USGS report**  
 7 **does have a description of lithologic logs that**  
 8 **were used in development of the model. So areas**  
 9 **with lower permeability were accounted for, but**  
 10 **they were averaged into model layers. There**  
 11 **could be specific details that are not reflected**  
 12 **entirely by that average.**  
 13 Q. So in your opinion, looking at those lithologic  
 14 logs would be very important, would they not?  
 15 **A. Yes. And -- and you could do some exploratory**  
 16 **drilling in areas where you may expect a lot of**  
 17 **drawdown to occur.**  
 18 Q. All right. I'd like to turn to, I think it is  
 19 your figure 8 in your report and ask what that  
 20 tells us?  
 21 **A. Figure 8, I added this to my report because I**  
 22 **did some analysis with the USGS model, I did**  
 23 **some analysis that's compatible with the**  
 24 **analyses that the USGS did with regard to**  
 25 **examining migration of chloride. And what I**

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1 actually did is you have a -- you have a flow  
 2 model that the USGS developed, and we've been  
 3 talking about that, I've been talking about that  
 4 quite a lot yesterday, and it's the model that  
 5 is the basis for the accounting. And that --  
 6 that is a -- an aquifer flow model.  
 7 But you can build into that model a  
 8 transport model that looks at velocity of  
 9 groundwater and then comes up with estimates of  
 10 migration of water particles, or chloride as was  
 11 done in that USGS study, or other chemical  
 12 constituents if you're interested in looking at  
 13 them. And I took that model and I ran the  
 14 scenarios that I came up with, the example  
 15 scenarios, A, B and C, and -- and I looked at  
 16 how much chloride migration there would be when  
 17 you lower water levels for each of those  
 18 scenarios. But I also specifically looked at  
 19 the migration from chloride if you were to lower  
 20 water levels from the current index level to the  
 21 proposed.  
 22 So for what I'm considering the new  
 23 diversion of groundwater, I looked to see how  
 24 much chloride migration there'd be from that.  
 25 And, actually, the results were somewhat similar

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1 to what's depicted on figure 8 here. And figure  
 2 8 is actually a figure that I adapted from the  
 3 USGS report. It's actually figure 27 from the  
 4 USGS report that describes the -- the transport  
 5 work that was done.  
 6 And I did adapt it, I did just pull that  
 7 figure in here, and then I added wells as black  
 8 dots that are depicted on the lower one-third of  
 9 the figure. On the lower one-third of the  
 10 figure, you can see some contour lines that  
 11 illustrate displacement of chloride, and the  
 12 displacement of chloride occurs where there are  
 13 wells depicted by the black dots that I added to  
 14 the figure.  
 15 And so that is an area where there's  
 16 expected to be some degree of chloride  
 17 migration. However, I need to clarify that the  
 18 USGS did find that there was an overestimate of  
 19 some groundwater velocities in that area. So  
 20 there is some migration of chloride that occurs  
 21 there, but that's understood at this time to be  
 22 somewhat of an overestimate of chloride  
 23 migration.  
 24 When I ran the model with scenarios A, B,  
 25 and C and -- and when I looked specifically at

1 the new diversion, I saw results that were very  
2 similar to what the USGS was showing in this  
3 particular map, so I just used the USGS's map  
4 instead of mapping my results on it. What I  
5 found was most of the chloride migration does  
6 occur on the southern portion of the map near  
7 the Little Arkansas -- sorry, near the Arkansas  
8 River. And there's also some migration that  
9 occurs up in the area near the Burrton plume.  
10 And so this was a preliminary study that  
11 was done. It looked like the USGS was poised to  
12 take it to the next level and try to improve the  
13 analysis and try to improve some areas where  
14 they're representing velocities in groundwater  
15 that were a little too fast than what was  
16 observed. So when I saw the results that I ran  
17 were just -- were similar in nature and to where  
18 it was occurring but also knowing that the USGS  
19 looked like they were poised to take the  
20 analysis to the next level to try to improve it,  
21 I just came up with a recommendation that it  
22 would be good to continue that work. That work  
23 was a cooperative effort between the USGS and  
24 the City, and continuing that effort would  
25 provide some insight into areas that could

1 really be affected by lowering water levels.  
2 Q. So it would be fair to say that that is what I  
3 would characterize as a danger of the proposal  
4 that has been not quantified in any way or  
5 explored beyond what you've done?  
6 A. Beyond what I've done or beyond what the USGS  
7 did.  
8 Q. Okay.  
9 A. Yeah.  
10 Q. Now, I'd like to turn to your report, which I  
11 think is Exhibit 68, and I want to direct you to  
12 page 3 of your report.  
13 **PRESIDING OFFICER:** I'm sorry, what  
14 page?  
15 **MR. ADRIAN:** Page 3 of his report.  
16 **BY MR. ADRIAN:**  
17 Q. Are you there?  
18 A. Yes, I am.  
19 Q. All right. And I again go to line 77, and the  
20 sentence at the end begins figure 1, and would  
21 you read that for us and then explain what  
22 you're saying there?  
23 A. Figure 1 shows how the hydrologic system  
24 responds to City ASR recharge credit pumping in  
25 the 1 percent drought simulation. Initially,

1 the pumping produces most of the water from  
2 aquifer storage, but as pumping continues, the  
3 cone of depression from groundwater pumping  
4 induces or depletes flow from the Little  
5 Arkansas and Arkansas Rivers. A notable  
6 observation on figure 1 is that stream depletion  
7 continues to occur for years after groundwater  
8 pumping ceases. This lagged depletion response  
9 occurs because even though pumping has stopped,  
10 stream depletion continues to fill the cone of  
11 depression that was caused when the well was  
12 pumping.  
13 That is -- I'll actually direct us to  
14 figure 1 of my report. It's apparent in figure  
15 1 or figure 2, but let's go to figure 1. And  
16 what I was talking about there is that stream  
17 depletion continues even after the wells are  
18 turned off. So the maroon portion -- the maroon  
19 bars that are shown on the chart represent the  
20 pumping of ASR recharge, and the pumping stops  
21 actually at the end of year six where there's no  
22 more maroon bars that are present. But the  
23 lower half of that chart that shows the blue  
24 portion is stream depletion, and you'll see that  
25 stream depletion actually continues - time is

1 moving horizontally on this chart - the stream  
2 depletion continues even after the well is  
3 turned off.  
4 And that is because when you pump your  
5 wells, they create a cone of depression. When  
6 you turn off the wells, the water level starts  
7 recovering, but when the water level is  
8 recovering it's being filled in by flow from the  
9 river. So I was just clarifying that stream  
10 depletion continues even after the wells are  
11 turned off.  
12 And I described how these charts are really  
13 balancing charts, and you can see that after the  
14 wells are off, there's a blue area on the lower  
15 half of the chart and a gray area on the upper  
16 half of the chart and they're -- they're  
17 equidistant from zero. And what's happening is  
18 the river depletion is filling in aquifer  
19 storage at the same rate that the depletion is  
20 occurring. So the point is just that when you  
21 turn off the wells, that doesn't mean that the  
22 stream depletion stops immediately.  
23 Q. And then also turn to page 7 of your report, and  
24 I direct you to -- starting on line 195.  
25 A. Okay.

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1 Q. And would you read the first two sentences  
2 there?  
3 **A. The USGS model simulates the Little Arkansas and**  
4 **Arkansas Rivers as a boundary condition that**  
5 **does not account for total streamflow. That is,**  
6 **if segments of the river near the City dry out**  
7 **or have low flow during a drought, the model**  
8 **does not account for it. Actually, I think the**  
9 **next sentence is kind of the key point. In that**  
10 **setting, there's potential for the model to**  
11 **overestimate river depletion from pumping, which**  
12 **translates to an underestimation of drawdown to**  
13 **aquifer water levels.**  
14 **The point that I was making there is I**  
15 **talked about how there is a balancing when you**  
16 **pump the wells, part of the water will be**  
17 **removed from the aquifer, and part of the water**  
18 **will come from the river. If the river dries**  
19 **out or a portion of it dries out, then the --**  
20 **then the wells cannot take as much water from**  
21 **the river, which would result in the wells**  
22 **taking more water from the aquifer. So it can**  
23 **affect the accounting of stored water and river**  
24 **effects.**  
25 **So if you're accounting for aquifer storage**

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1 **and recovery or credit water and water that's**  
2 **diverted from your water right, whether or not**  
3 **the river is making a proper contribution to**  
4 **water can affect that accounting. So that's**  
5 **part of my reasoning for just recommending that**  
6 **some sensitivity be done to analyze how**  
7 **different the accounting would be if parts of**  
8 **the river were dry for a period of time.**  
9 Q. Again, that was not an analysis that was done in  
10 the proposal or any of the testimony in support  
11 of the proposal, was it?  
12 **A. I do not believe so.**  
13 Q. All right. I want to direct you now to the  
14 proposal itself, and that would be page -- the  
15 proposal itself and I don't have the exhibit  
16 number on that in front of me. Can you find  
17 that, Mr. Romero?  
18 **A. I have it.**  
19 Q. And page -- it's figure 16.  
20 **A. I am there.**  
21 Q. Okay. I want you to comment on that. I think  
22 you did in -- earlier in the direct, but I want  
23 to refresh my memory in that regard, to explain  
24 that figure to us as soon as the hearing officer  
25 finds her figure there.

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1 **PRESIDING OFFICER:** Figure 16?  
2 **MR. ADRIAN:** 16.  
3 **PRESIDING OFFICER:** Of the proposal?  
4 **MR. ADRIAN:** Yes.  
5 **PRESIDING OFFICER:** Oh, sorry, yes,  
6 I have it.  
7 **A. This is something I address really in kind of**  
8 **the last section of my report, and this chart is**  
9 **illustrating current versus proposed accounting**  
10 **methods, and one of the things that you can see,**  
11 **if you look at the figure, is when you look at**  
12 **cumulative storage credits, which is the**  
13 **vertical axis, as you move higher up on the**  
14 **chart, there's a deviation between the**  
15 **accounting -- between the current accounting**  
16 **method and the proposed accounting method.**  
17 **Excuse me.**  
18 **And -- and I understand the reasoning for**  
19 **having a proposed accounting method, it's --**  
20 **it's a more simplified method than running the**  
21 **model every time, which -- which is a fine**  
22 **approach, I'm all -- I'll always be for**  
23 **simplifying things if you can, but since there**  
24 **is a deviation that occurs when you get to the**  
25 **cumulative recharge credits increasing, I'm -- I**

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1 **have a suggestion of maybe enhancing the**  
2 **simplified method a little bit or seeing if it**  
3 **could be enhanced to account for that. And if**  
4 **that's possible, I'd just suggest making an**  
5 **adjustment to the simplification.**  
6 **BY MR. ADRIAN:**  
7 Q. So if I understand you correctly, what you're  
8 saying is that the simplified method is not as  
9 accurate as what could be done?  
10 **A. It's a little different from the current method.**  
11 Q. Yes.  
12 **A. Yes.**  
13 **MR. ADRIAN:** If I could have just a  
14 moment.  
15 (A sotto voce discussion was held  
16 between Mr. Adrian and Mr. Boese.)  
17 **BY MR. ADRIAN:**  
18 Q. Mr. Romero, you -- in terms of water quality,  
19 what you referred to was primarily chlorides.  
20 Were there any other chemicals or invasive  
21 problems that you would see occur, or  
22 potentially occur?  
23 **A. The study that I looked at focused mostly on**  
24 **chloride. Chloride is kind of an interesting**  
25 **constituent in the sense of the way that it's**

1 spatially laid out. There is high chloride  
2 along the Arkansas River and in the area of  
3 Burrton, it's generally west, southwest and --  
4 of City wells. So as the City wells pump more  
5 water or lower water levels, that tends to  
6 induce chloride migration from those areas.

7 There is -- there is a USGS study that  
8 looks at other constituents. There is arsenic  
9 in the area. Arsenic is -- in the deep portion  
10 of the aquifer, there's some arsenic that is  
11 along the Little Arkansas and also in the area  
12 of Burrton. And really any constituent that is  
13 in an area that is not so close to the City  
14 wells, if you pump the wells, it would promote  
15 inducing that constituent toward the wells.

16 Q. As I recall in the hearings we held in regard to  
17 Phase I and in the hearings we held in regard to  
18 Phase II, arsenic was an issue that was raised  
19 at that time, concern of arsenic invasion. Did  
20 you look at those -- the transcripts on those  
21 proceedings at all, have you done any study with  
22 regard to migration of arsenic?

23 A. I have not.

24 Q. So your sole source would be that USGS study  
25 that you looked at?

1 A. It does, but it depends what constituent you're  
2 looking at. If it's a constituent that makes --  
3 that is present in a lot of the area, it just  
4 displaces it; and -- and so it could degrade it  
5 to the area that it displaces it, but it could  
6 improve it in the area that it moves away from.  
7 So it's complex.

8 Q. Well, in that sense, I was referring primarily  
9 to the chloride plume around Burrton and the  
10 saltwater invasion around the Big Ark River?

11 A. I agree with you in that context.

12 Q. And, in fact, the City didn't address that at  
13 all, did they?

14 A. I did not see it in -- in the proposal.

15 Q. And also lowering the minimum index level has  
16 the -- the effect of affecting minimum desirable  
17 streamflow, does it not?

18 A. It does.

19 Q. And the City didn't address that at all, did  
20 they?

21 A. I did not see it in the proposal.

22 Q. And also it has the effect of impairing, I'm  
23 referring again to the lowering of the minimum  
24 index level, it has the effect of impairing  
25 wells within the City well field -- other users

1 A. Yes. There are other constituents as well, but  
2 it just kind of depends on where -- where these  
3 constituents are located. In some cases, you  
4 can have other constituents that kind of make up  
5 a large portion of the area. In cases like  
6 that, pumping a well can move that particular  
7 constituent closer to it, but it can also move  
8 it further away from other wells. So it's  
9 really complex when you start thinking about  
10 that sort of thing.

11 In the deep aquifer, though, chloride is in  
12 a setting such that it could be pulled toward  
13 wells that are in the basin storage area, and  
14 arsenic in the deep aquifer being near the  
15 Little Arkansas is somewhat in a similar  
16 setting.

17 Q. So it's an unknown at this point, an unknown  
18 danger?

19 A. Yeah. I mean, if it was brought up in earlier  
20 discussions, there -- that would make sense and  
21 I could see that from the setting that's there.

22 Q. So the effect of -- in summary, the effect of  
23 lowering the minimum index level has the  
24 potential of degrading water quality, does it  
25 not?

1 within the City well field?

2 MR. OLEEN: I again object to use of  
3 that legal term, impairment. If the  
4 witness understands the question to be  
5 under the previous assumption that he was  
6 given as to what impairment means --

7 MR. ADRIAN: I thought that still  
8 stood but --

9 PRESIDING OFFICER: Okay,  
10 understood.

11 A. If that still stands, I agree.

12 BY MR. ADRIAN:

13 Q. And also withdrawing the AMC credits as they  
14 propose would also have the effect of degrading  
15 water quality, would it not?

16 A. It -- diverting groundwater from the area would.  
17 Whether it's considered an ASR credit or an AMC,  
18 the effects would be the same.

19 Q. And it also, as I asked above, it has -- the  
20 City did not address that issue, did they?

21 A. I did not see that in the proposal.

22 Q. And it also, withdrawing the AMC credits, has  
23 the effect of affecting -- affecting the minimum  
24 desirable streamflow, does it not?

25 A. Yes.

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1 Q. And using little I on the word impairment, it  
 2 has the -- the effect of impairing the wells in  
 3 the City area, that is withdrawing the AMC  
 4 credits, to an unknown extent, does it not?  
 5 **A. Yes.**  
 6 Q. And, again, the City did not address the issue,  
 7 did they?  
 8 **A. It's not present in the proposal.**  
 9 Q. Now, Mr. Romero, you've had vast experience, I  
 10 think it was mentioned and related yesterday,  
 11 really all over mostly the western United  
 12 States, have you not?  
 13 **A. Yes.**  
 14 Q. And so you've worked on numerous projects either  
 15 similar or not similar to this proposal, have  
 16 you not?  
 17 **A. Yes.**  
 18 Q. Would you be in a position to say what you feel  
 19 would be sort of the standard of care that  
 20 should be taken in a proposal of this type?  
 21 **A. I'd say generally to not cause harm from an  
 22 applied-for type of water use.**  
 23 Q. So the standard that you would see around the  
 24 United States or primarily the western United  
 25 States would at the very least address those

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1 three issues, would it not?  
 2 **A. Which three issues?**  
 3 Q. Well, the potential for streamflow, damage to  
 4 streamflow for chloride movement, and impairment  
 5 of other wells?  
 6 **A. Yes, that -- I'm often analyzing hydrologic  
 7 effects to provide some context so decisions  
 8 could be made as to how to handle those types of  
 9 issues.**  
 10 **MR. ADRIAN:** Just a moment, please.  
 11 (A sotto voce discussion was held  
 12 between Mr. Adrian and Mr. Boese.)  
 13 **MR. ADRIAN:** All right. I think we  
 14 have no other questions.  
 15 **PRESIDING OFFICER:** Mr. McLeod.  
 16  
 17 **CROSS-EXAMINATION**  
 18 **BY MR. MCLEOD:**  
 19 Q. Good morning, Mr. Romero.  
 20 **A. Good morning.**  
 21 Q. Mr. Romero, when you were discussing your  
 22 background and qualifications, you mentioned  
 23 having a Q clearance in connection with some  
 24 work that you did on evaluating plugging  
 25 materials near Los Alamos. What is a Q

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1 clearance?  
 2 **A. That -- that was a clearance required for doing  
 3 certain types of work at Los Alamos that related  
 4 to national security.**  
 5 Q. Was the basis of evaluating people for that  
 6 clearance related to their technical competence  
 7 or the government's belief that they could be  
 8 trusted to keep confidential information  
 9 confidential?  
 10 **A. More the latter, I under -- I understand the  
 11 qualification to be really an honest American.  
 12 The concern is that you may have some  
 13 information that you're not honest about and  
 14 then someone could blackmail you to try to get  
 15 secret information that you have. So that's  
 16 generally how I understand that.**  
 17 Q. Mr. Romero, you had mentioned that when you ran  
 18 the model you had -- you had produced results at  
 19 variance with the Burns & McDonnell results  
 20 generally by a difference of 3 feet or less. I  
 21 didn't hear whether you ever said whether the  
 22 levels that you got in your results were higher  
 23 or lower than the levels that they got in their  
 24 results?  
 25 **A. Oh, I seem to recall it was a little bit of a**

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1 **mix.**  
 2 Q. So there were some each way?  
 3 **A. I believe so.**  
 4 Q. Do you remember if they were predominantly  
 5 higher or lower?  
 6 **A. I do not.**  
 7 Q. And you indicated that that difference did not  
 8 matter for your conclusions, and can you tell us  
 9 again why that difference of a few feet didn't  
 10 matter for your conclusions?  
 11 **A. It didn't significantly -- significantly change  
 12 the numbers that I was looking at enough to  
 13 change my conclusions. I -- I presented some  
 14 numbers that illustrate a volumetric analysis of  
 15 how much you pump and how much the river  
 16 responds and how much the aquifer responds, and  
 17 there was some difference in the numbers but not  
 18 enough to change the fact that there's still a  
 19 balance between effects to the river and to the  
 20 aquifer. And in terms of -- in terms of overall  
 21 drawdown, it was, you know, plus or minus a few  
 22 feet, it really didn't change the picture that  
 23 there was some wells that lose their water  
 24 column.**  
 25 Q. And given that your results were that close to

1 the Burns & McDonnell result, do you believe  
2 that their modeling work in connection with  
3 determining the new 1993 proposed index levels  
4 was done reasonably?

5 **A. I do.**

6 Q. And do you regard their modeling work in that  
7 respect as generally valid?

8 **A. In terms of -- there were some assumptions that  
9 are made, but in terms of the technical  
10 approach, I consider it reasonably valid, yeah.**

11 Q. And, Mr. Romero, you used the term glitch in  
12 relation to an issue that arose with respect to  
13 some differences in data files, and I think you  
14 related it to something that can happen if the  
15 files have been in contact with a particular  
16 interface. Can you explain that for us a little  
17 bit better?

18 **A. Yes. The -- the model files in their most raw  
19 form are actually in a format that's designed by  
20 the U.S. Geological Survey in terms of input  
21 files. And it used to be that when you worked  
22 with models, you know, sometime ago before these  
23 interfaces existed you had to set up those input  
24 files with your own method, you had to come up  
25 with your own method to set up the structure of**

1 **the input files.**  
2 **And when the files are set up, it's**  
3 **basically, if you can think of it almost like if**  
4 **you were looking at a Word document, you have**  
5 **spaces, you'll have -- at the beginning of a**  
6 **paragraph, you might have an indentation; then**  
7 **at the end of your paragraph you may have a**  
8 **space between your next paragraph. Well, the**  
9 **input files are set up with spaces in similar**  
10 **ways, and you can -- if you have a number that**  
11 **is an incorrect space -- that is an incorrect**  
12 **space, like let's say in one of your paragraphs**  
13 **you leave out an indent, then when the model**  
14 **reads the files, it will read that you missed**  
15 **that indent, and that will mean something**  
16 **different in the model than if you didn't have**  
17 **an indent that was there.**

18 **So there are these interfaces that have**  
19 **been developed by people to help facilitate**  
20 **working with models, and a glitch would be that**  
21 **the interface puts an indent in a place where it**  
22 **shouldn't have put an indent; and then that gets**  
23 **read into the model, but it means something**  
24 **different in the model. So it's just an error**  
25 **in the input file. And these models change all**

1 **the time, and the interface programs try to keep**  
2 **up, but sometimes they have trouble keeping up.**

3 **And so since -- since I saw that difference**  
4 **and I saw it didn't make -- it really didn't**  
5 **affect my overall conclusions, I thought it was**  
6 **okay to proceed with my analysis where I didn't**  
7 **have that glitch built into the files. And then**  
8 **when I received a copy of Mr. McCormick's**  
9 **supplemental report where he described that he**  
10 **looked at that issue and said that he did not**  
11 **have that issue on his end of working with the**  
12 **files, that's -- then I thought it just may have**  
13 **been a glitch, which sounded like a reasonable**  
14 **explanation to me.**

15 Q. And so also when Counsel -- when Counsel asked  
16 you about Mr. McCormick's statement that he had  
17 used files not affected by that glitch and you  
18 said you didn't know conclusively if he had, you  
19 don't really have any reason to doubt  
20 Mr. McCormick on that point, do you?

21 **A. I don't.**

22 Q. Did the City's proposal include an output of  
23 tables and figures that include groundwater  
24 levels by MODFLOW cell and by index well?

25 **A. Can you just repeat that?**

1 Q. Did the City's proposal include an output of  
2 tables and figures that include groundwater  
3 levels by MODFLOW cell and by index well?  
4 **A. It did.**  
5 Q. If you were reviewing what the impact of the  
6 modeling results are, is a predicted water  
7 elevation a valuable piece of information for a  
8 regulatory agency?  
9 **A. Generally, yes.**  
10 Q. If you're reviewing what the impact of the  
11 modeling results are, is a predicted saturated  
12 thickness a valuable piece of information for a  
13 regulatory agency?  
14 **A. Yes.**  
15 Q. In terms of impact of the feet difference  
16 between your results and the -- and the Burns &  
17 McDonnell results as it relates to the  
18 contingency, I think you had -- you had  
19 indicated as a general matter in your main  
20 testimony that the differences between the  
21 results could add to the variance in the  
22 contingency. My specific question, where the  
23 difference between the Burns & McDonnell results  
24 was that their level was actually higher than  
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9 difference between the Burns & McDonnell results  
10 was that their level was actually higher than  
11 your results, then in that instance, is that

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1 variance actually eating up part of the  
2 contingency?  
3 **A. It wouldn't.**  
4 Q. If -- if we use the level, the proposed level  
5 for the Burns & Mac model results and your  
6 results show there actually should be a lower  
7 level at that index cell, then isn't part of the  
8 contingency accounted for by that difference in  
9 the model results?  
10 **A. I think in the setting we have here, yes. The**  
11 **contingency was added, as I understand it, in**  
12 **one direction, downward. It sounds to me like**  
13 **you're describing -- if you're talking about a**  
14 **difference that is upward, then it doesn't take**  
15 **it into account. If you're accounting for a**  
16 **difference that is downward in the same**  
17 **direction as the contingency, then it does eat**  
18 **up part of that contingency.**  
19 There isn't a lot of detail described in  
20 how that contingency was come up with. You  
21 know, I think in terms of -- if I were  
22 developing a contingency, I would -- I would  
23 consider what the model is showing in comparison  
24 to what is actually shown in a calibration, and  
25 you could start to weight areas where the model

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1 may be showing more drawdown than what's  
2 observed versus less drawdown than what's  
3 observed. And you can take all that information  
4 and build it into something that's a plus or  
5 minus type of contingency.  
6 This contingency goes in one direction. If  
7 I were looking at something like that, I would  
8 expect it to be something that would be a plus  
9 or minus type of thing. Those are my general  
10 thoughts on the contingency.  
11 Q. Mr. Romero, do you think a contingency is  
12 appropriate to account for variations in things  
13 like potential changes in pumping?  
14 **A. I -- I do think it's reasonable. There is --**  
15 **but one thing to be careful with with regard to**  
16 **contingencies is there's a whole class of study**  
17 **of -- that was done -- that's been done with**  
18 **modeling to try to figure out uncertainty in**  
19 **results and uncertainty in projections. And it**  
20 **involves running multiple simulations, thousands**  
21 **of simulations, and making changes in the**  
22 **aquifer properties within a plausible range of**  
23 **numbers.**  
24 When you do that, you could run thousands  
25 of simulations, and in each case you can get a

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1 **projected water level that's somewhat different;**  
2 **and because you run thousands of them, you**  
3 **actually generate some statistics on the**  
4 **results. And once you have statistics on those**  
5 **results, you can come up with plus or minus**  
6 **uncertainty quantities.**  
7 And that's a very extensive process, it's  
8 very expensive, takes a lot of time and a lot of  
9 effort. Anytime that you do that, that's the  
10 most mathematical appropriate way to do that,  
11 but you can step back and say, if I just go plus  
12 or -- I've looked at this a number of times, and  
13 I've stepped back and said, if you just step  
14 back and say, here's my average number, instead  
15 of running all these multiple -- all these  
16 multiple simulations, I can just say, let's just  
17 go with plus or minus 20 percent or plus or  
18 minus 30 percent and just run three simulations,  
19 one that's plus 30, one that's minus 30, and  
20 you'd actually envelope all those thousands of  
21 simulations, rendering them unnecessary, even  
22 though they're more mathematically appropriate.  
23 So then -- so you could take that approach,  
24 the latter approach where you just run one  
25 simulation using your best planning average and

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1 go plus or minus 20 percent or plus or minus  
2 30 percent and say, okay, we have a pretty good  
3 bandwidth that we can work with here. And --  
4 but then you can say, well, which one should we  
5 decide on? I -- I tend to say the one in the  
6 middle because then you're not going too far out  
7 of the ballpark one way or the other.  
8 So contingencies can be appropriate, but  
9 you want to be careful that your contingency  
10 doesn't pull you out of the ballpark when you've  
11 tried to stay in the ballpark for your whole  
12 analysis working with an average number that's  
13 in the middle.  
14 Q. That process of running thousands of simulations  
15 to analyze the risk probability, Mr. Romero, is  
16 there a term of art for that in analytics?  
17 **A. Yeah, it's call a stochastic approach.**  
18 Q. Thank you. And I think you had indicated even  
19 in your main testimony that you preferred,  
20 because of the expense and elaborate time  
21 commitment in that type of analysis, to use that  
22 20 percent rule of thumb?  
23 **A. Yes.**  
24 Q. Let me just ask a few more questions about  
25 factors to consider in contingencies. Would you



1 think contingency is appropriate to account for  
2 things such as variations in actual climate as  
3 compared to simulated?

4 **A. Yes.**

5 Q. Or the calibration statistics of the area of  
6 interest?

7 **A. Yes, that's another factor.**

8 Q. And then, Mr. Romero, when -- when you do  
9 stochastic analysis, and it gives you really a  
10 risk probability, doesn't it?

11 **A. Sure.**

12 Q. Isn't another factor to consider the impact  
13 if -- if you are wrong, what's going to go wrong  
14 if the number that you choose is incorrect?

15 **A. You can do that.**

16 Q. So would you want to be generally more  
17 conservative in setting a contingency in a case  
18 where, for example, the water supply of a half  
19 million people hinged on whether that  
20 contingency was adequate?

21 **A. You can make some conservative choices in a  
22 situation of planning such as that, sure.**

23 Q. It might be a really good reason not to pick the  
24 middle of the possible results, mightn't it?

25 **A. It can be, yes.**

1 Q. And also I want to ask you under the current  
2 permit conditions, which only currently provide  
3 for the presence of credits due to physical  
4 recharge, which was put in by the City and which  
5 under the accounting method is still there and  
6 has not leaked out, wouldn't that water that you  
7 term a new diversion all be water that the City  
8 actually put there?

9 **A. Can you just repeat that, it was a little long?**

10 Q. Yeah. Under the current permit conditions where  
11 the only recharge credits that the City can  
12 claim are the physical recharge credits for  
13 water that's been injected and has not leaked  
14 out and under the accounting it's still there,  
15 isn't the water that the City would be diverting  
16 by lowering the bottoms and taking those credits  
17 water that the City put there?

18 **A. To that extent, yes.**

19 **PRESIDING OFFICER:** If I'm  
20 understanding what he was describing as,  
21 quote, new diversions yesterday, I thought  
22 those were just in terms of the proposed  
23 lower index level, not the current ASR  
24 credits. Am I mistaken about that?

25 **BY MR. MCLEOD:**

1 Q. Mr. Romero, I -- I know you didn't use it in the  
2 sense of legal diverting or diversion, but you  
3 conceptualized the lowering of the 1993 index  
4 levels as a new diversion of water by the City.  
5 I wanted to ask you, do you understand that the  
6 City's not precluded from using its native  
7 rights if index levels go below those 1993  
8 levels?

9 **A. I -- I do recognize that and -- which is  
10 actually why I ran an analysis of diverting the  
11 City water right before diverting credit water  
12 in the analyses that I -- that I ran.**

13 Q. Right. For an eight-year period, though?

14 **A. Yes, for an eight-year period.**

15 Q. Conceivably, if the City reached year eight and  
16 the drought persisted and the City had to draw  
17 its full native rights in year nine and then  
18 year ten --

19 **A. Or 11 and 12.**

20 Q. -- the 1993 index levels would not preclude  
21 that, correct?

22 **A. As I understand it, it would not.**

23 Q. No matter what the hydrologic impact on the  
24 aquifer or the streambeds might be?

25 **A. It seems that way.**

1 Q. So let's clean it up. Mr. Romero, what you were  
2 referring to as a new diversion, it was the  
3 difference in volume the City would be able to  
4 withdraw if the index levels were lowered below  
5 the 1993 index levels, correct?

6 **A. Yes.**

7 Q. And that would represent, because you had  
8 already modeled the City taking its native  
9 rights, that would represent the City taking  
10 credits, correct?

11 **A. Taking credits that they're currently not  
12 permitted to take, yes.**

13 Q. Right. And so because that's volume the City  
14 can't take now, you -- you regarded it in that  
15 sense as a new diversion of water because the  
16 City could take credits below the 1993 limits if  
17 the bottoms were lower?

18 **A. Yes, in the context of credits.**

19 Q. And, currently, the only credits that the City  
20 has under current permit conditions is for water  
21 the City actually put there, correct?

22 **A. As I understand it, yes.**

23 Q. So in a sense, in the sense that the City is  
24 able to take more water if the bottoms are  
25 lowered, the City is withdrawing more water, but

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1 it's water the City put there, correct?  
 2 **A. It is water that the City put there, but it**  
 3 **seems that it would be water that was put there**  
 4 **in the zone that's above the current minimum**  
 5 **index level.**  
 6 Q. And also, if this doesn't get us too far into  
 7 the weeds, if the AMCs were to be approved and  
 8 the City could withdraw credits that weren't  
 9 physical credits, even as to those AMCs,  
 10 wouldn't the new diversion be water that's there  
 11 because the City took water from the Little Ark  
 12 and left that water in place instead of pumping  
 13 its native rights in some prior period?  
 14 **A. I think there's a question about whether or not**  
 15 **water would be put in the zone of the aquifer**  
 16 **beneath the current minimum index level. If you**  
 17 **assume that water levels got pulled down below**  
 18 **the current minimum index level and then the**  
 19 **City put water back in, then they'd be putting**  
 20 **water back in below the current index level**  
 21 **elevation. So there's -- it seems there's a**  
 22 **question about when you put the water in what**  
 23 **elevation our water level is at when you put it**  
 24 **in.**  
 25 Q. Did you understand, Mr. Romero, from the permit

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1 conditions that the City is allowed to recharge  
 2 and inject water in the aquifer when it's below  
 3 the 1993 minimum index levels?  
 4 **A. I'm actually not familiar with that.**  
 5 Q. Okay. If the permit conditions said that the  
 6 City was entitled to inject water, if it's got  
 7 source water, in the aquifer despite being below  
 8 that bottom index level, the 1993 limits, would  
 9 that affect your opinion?  
 10 **A. Yes.**  
 11 Q. And how would it?  
 12 **A. Well, if -- if you place water into the aquifer**  
 13 **below the current level, then that's water that**  
 14 **was put there.**  
 15 Q. Thank you. I think in your main testimony, as  
 16 you were looking at some of the figures in the  
 17 City's proposal, including, I think,  
 18 specifically figure 10, Counsel had -- had asked  
 19 you whether that showed any impacts on  
 20 individual wells, and I think you indicated that  
 21 neither of the figures you were looking at, 10  
 22 or 11, zeros in and focuses on individual  
 23 effects to individual wells, except for index  
 24 wells, I believe you said. Do those two  
 25 figures, just to be clear for the record, show

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1 effects on individual index wells?  
 2 **A. They do. It doesn't show effects to other**  
 3 **neighboring wells in the area.**  
 4 Q. Right. And your understanding of the Burns &  
 5 McDonnell modeling, do you believe that they  
 6 determined the impact on those index wells by  
 7 the impact in the index cell in which each of  
 8 those index wells was located?  
 9 **A. Yes.**  
 10 Q. The model that Burns & McDonnell used, in fact,  
 11 it doesn't account for any area smaller than an  
 12 index cell, does it?  
 13 **A. The -- the model has cells that are smaller than**  
 14 **the index cells. The model grid itself has**  
 15 **cells that I think are 400 feet by 400 feet.**  
 16 Q. So within that 400-feet-by-400-feet precision,  
 17 the model will give you results, and if a well  
 18 is in that cell, then you can apply those  
 19 results to that well, if it's an index well,  
 20 correct?  
 21 **A. Yes.**  
 22 Q. And do you have a sense if that's what Burns &  
 23 McDonnell did in their modeling?  
 24 **A. I suspect that's what they did.**  
 25 Q. Do you agree that their modeling as far as what

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1 they show for the index wells was appropriately  
 2 done?  
 3 **A. I think -- yes.**  
 4 Q. Mr. Romero, Counsel blew by this in your main  
 5 testimony by asking you if there wasn't some  
 6 kind of a statement in a USGA (sic) report about  
 7 shouldn't be used to look at individual wells,  
 8 and I think you said that statement sounds  
 9 familiar. And I think that was the extent of  
 10 your testimony about that statement so far,  
 11 correct?  
 12 **A. Can you repeat that?**  
 13 Q. Counsel had asked you if there was -- if there  
 14 was a reference in one of the USGS reports, I  
 15 think he called it the specifications, we were  
 16 in Exhibit 46, whether there was some statement  
 17 there about it shouldn't be used to look at  
 18 individual wells.  
 19 **A. Oh.**  
 20 Q. And he didn't want to take time for you to look  
 21 at the actual statement, and I think you  
 22 indicated that that statement sounded familiar  
 23 but that was all you ventured on that point; is  
 24 that correct?  
 25 **A. In that testimony, yes.**

1 Q. Let's go to Exhibit 46, let's turn to page 72 in  
2 that exhibit. And I think that's in Volume III.

3 **PRESIDING OFFICER:** And what page  
4 was that, please.

5 **MR. MCLEOD:** Page 72.

6 **PRESIDING OFFICER:** Thank you.

7 **A.** I'm on page 72.

8 **BY MR. MCLEOD:**

9 Q. There's a section on that page called Model  
10 Limitations, Mr. Romero, I'm looking for but not  
11 finding that statement there, but will you look  
12 on that page and see if you can find the  
13 statement --

14 **A. Yes.**

15 Q. -- that you recall Counsel was referring to?  
16 And to shorten it up now I think I have found  
17 it, if you will look at limitation number 2.

18 **A. Okay.**

19 Q. Just read that for the record.

20 **A. The groundwater flow model was discretized using  
21 a grid with cells measuring 400 feet by 400  
22 feet. Model results were evaluated on a  
23 relatively large scale and cannot be used for  
24 detailed analyses such as simulating water level  
25 drawdown near a single well. A grid with**

1 **near where that calibration was done other wells  
2 may have been doing something somewhat different  
3 than the well that was used for the calibration.**

4 **But it is certainly reasonable to take the  
5 model, evaluate drawdown based on the  
6 calibration, look at wells in the area and  
7 see -- to see whether or not drawdown exceeds  
8 water columns that are in wells in that area.**

9 Q. In point of fact, Mr. Romero, that's exactly  
10 what you did too, isn't it?

11 **A. Yes, that's what I did.**

12 Q. So -- so contrary to what an earlier witness,  
13 Dr. Akhbari, testified was possible, basically  
14 you assessed the model impact, the regional  
15 impact on these 400-by-400-foot cells, and then  
16 using the well information that you had from KGS  
17 and the Intervenors, you figured out what wells  
18 were in that 400-by-400-foot cell, and you  
19 figured out how given the depth of those wells  
20 those wells might be impacted by the regional  
21 drawdown in that 400-by-400-foot cell. Isn't  
22 all of that correct?

23 **A. That's correct.**

24 Q. And, indeed, Mr. Romero, if we were to look at  
25 that limitation in context in the USGS report,

1 **smaller cells would be needed for such detailed  
2 analysis.**

3 Q. Okay. And Burns & McDonnell, they didn't have a  
4 grid with smaller cells, did they, as we were  
5 discussing the smallest -- the smallest grid in  
6 this model is the 400 foot by 400 foot, correct?

7 **A. Yes.**

8 Q. Mr. Romero, when you ran the model, you didn't  
9 change that facet of the model that the smallest  
10 cell was 400 foot by 400 foot, did you?

11 **A. I did not.**

12 Q. And so to this -- to the extent that the  
13 District wants to suggest that this limitation  
14 means that you can't assess impacts to a well  
15 without cells smaller than 400 foot by 400 foot,  
16 would you disagree with that contention?

17 **A. I think it is suitable to use the model to  
18 understand drawdown that happens in well areas.  
19 I think this -- you want to be careful with  
20 drawing a single sentence from a entire report  
21 and saying that in every case there's not  
22 utility to using the model in this way.**

23 **This model was calibrated to water levels  
24 at individual wells, that was part of the  
25 calibration. It is certainly true that in areas**

1 isn't that limitation really more specifically  
2 about drawdown in pumping wells?

3 **A. It could be interpreted that way.**

4 Q. Do you think that the limitation is due to the  
5 point that drawdown inside a pumping well  
6 happens on a much smaller scale than the  
7 400-by-400-foot model cells and the drawdown  
8 changes so quickly in the area around the well  
9 that the 400-by-400-foot model cell, in fact,  
10 cannot capture the detail of that drawdown,  
11 correct?

12 **A. Of the drawdown in the actual well, that's  
13 correct.**

14 Q. And this limit has no impact on using the model  
15 to look at water levels at monitoring well  
16 locations, does it?

17 **A. That's correct. And a moment ago, I said in the  
18 well, I meant in the pumping well.**

19 Q. And --

20 **A. Yeah.**

21 Q. -- and in fairness to you and the method that  
22 you employed, it also, in fact, doesn't prevent  
23 you from evaluating pumping wells that are in  
24 the 400-by-400-foot cell, does it?

25 **A. It does not but there's also a particular way**

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1 **that you can simulate wells. There's a package**  
 2 **called a Multi-Node Well package that actually**  
 3 **will estimate the pumping water level in a well.**  
 4 **And I used that package when I did that.**  
 5 Q. So -- and to be clear, Mr. Romero, when Counsel  
 6 asked you if -- when Counsel asked you about  
 7 that statement and then immediately after asked  
 8 you if you had modified your model so that you  
 9 could look at impact to individual wells, you,  
 10 in fact, didn't -- didn't modify anything to do  
 11 with the structure of the model that uses the  
 12 400-by-400-foot cell, did you?  
 13 **A. I did not, no.**  
 14 Q. Counsel referred -- referred to that part of  
 15 your work as you taking it upon yourself to do  
 16 those analyses. And for accuracy and  
 17 completeness of the record, I just want to ask,  
 18 was that really the way it was, or was that part  
 19 of what they hired you to analyze?  
 20 **A. When I was retained, I was asked questions about**  
 21 **impacts to wells in the area, I was asked about**  
 22 **that kind of detail.**  
 23 Q. So it wasn't something that you just decided  
 24 since you were in the course of the engagement  
 25 and that might be kind of cool to go do that

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1 analysis, correct?  
 2 **A. It was -- when I was asked, I said I can look**  
 3 **in -- when I was asked to look into effects to**  
 4 **wells, I said, I'll take a look at the model,**  
 5 **I'll take a look at the analyses, and I'll see**  
 6 **what I can do. But there was an interest in**  
 7 **wells that I was asked to look at.**  
 8 Q. And, Mr. Romero, if I understand what you said  
 9 here just today, you referred to the model as  
 10 being adequately calibrated. You didn't  
 11 recalibrate the model when you used it, did you?  
 12 **A. I did not.**  
 13 Q. And you didn't personally do any well-by-well  
 14 calibration of the type that Dr. Akhbari  
 15 suggested should be necessary to evaluate  
 16 individual well impacts, did you?  
 17 **A. I did not, but that point brought up by**  
 18 **Dr. Akhbari could be addressed with some sort of**  
 19 **uncertainty assessment. I did not do that**  
 20 **either.**  
 21 Q. And was that because in your professional  
 22 opinion as a person who has much more modeling  
 23 experience than Dr. Akhbari, you didn't think  
 24 that that was necessary?  
 25 **A. For the analysis that I did, I did not think it**

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1 **was necessary.**  
 2 Q. I will ask this additional question because I  
 3 think you've offered this in your testimony  
 4 today. My recollection is that Dr. Akhbari  
 5 testified that the USGS model was only  
 6 calibrated on a regional basis, and I thought I  
 7 heard you say a short time ago that there are,  
 8 indeed, well specific calibrations that are a  
 9 part of the USGS model; is that correct?  
 10 **A. There are. There are some zones in the model**  
 11 **where calibration was done at a smaller scale**  
 12 **than the entire model. I think the term -- it's**  
 13 **not entirely clear what -- how far you're**  
 14 **talking about when you use the term regional,**  
 15 **but there are some subareas within the model**  
 16 **that were set up by the USGS for part of the**  
 17 **calibration -- or for the calibration.**  
 18 Q. Mr. Romero, in terms of running scenarios based  
 19 on the City withdrawing 120,000 acre-feet of  
 20 water over the course of -- actually, you didn't  
 21 do that. I believe Counsel asked you in light  
 22 of the results that you did run, would it be  
 23 worse if the City withdrew 120,000 acre-feet  
 24 over the course of the eight-year simulation.  
 25 You understand that the City is not proposing to

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1 do that, correct?  
 2 **A. That the City is not proposing to divert**  
 3 **120,000 --**  
 4 Q. Right.  
 5 **A. -- acre-feet? I understand that to be a cap, a**  
 6 **proposed cap on diversions of water if it were**  
 7 **an aquifer maintenance credit.**  
 8 Q. And -- and you've seen the table, I mean, you  
 9 used the table of the City's projected drought  
 10 needs for your figure 1 scenario, correct, to  
 11 model what the City's projected pumping actually  
 12 would be in the eight-year drought?  
 13 **A. I'm sorry, could you just repeat that?**  
 14 Q. Your figure 1, what was it based on?  
 15 **A. It was based on the amount of recharge that the**  
 16 **City pumped -- the recharge credit water that**  
 17 **the City pumped during the 1 percent drought**  
 18 **scenario.**  
 19 Q. And that was drawn from a table in the City  
 20 proposal?  
 21 **A. Yes.**  
 22 Q. And did that table propose that the City  
 23 withdraw 120,000 acre-feet of credits during the  
 24 eight-year drought?  
 25 **A. It did not.**

1 Q. And, in fact, Mr. Romero, the City's proposal  
2 doesn't propose to pump down to the new lower  
3 levels either, does it, during the eight-year  
4 drought?  
5 **A. The proposal -- the analysis in the proposal  
6 does not pull water levels down to the proposed  
7 minimum index level. That's the reason that I  
8 did an analysis that does that.**  
9 Q. And really your analysis is -- is a  
10 this-could-happen and, therefore, I'm going to  
11 model it to see what the impact would be,  
12 correct?  
13 **A. Yes, it is. And it's often a question that's  
14 asked of me in other areas where I've evaluated  
15 proposals or permits or applied-for permits is  
16 to get an understanding of what the effect is  
17 for the amount that would be permitted.**  
18 Q. I also want to ask this question, and simply --  
19 and simply pointing at the work that you did and  
20 then asking you to say, well, how much worse  
21 would it be if the City withdrew 120,000  
22 acre-feet over eight years, doesn't that  
23 question isolated simply to the withdrawal  
24 ignore the whole front end of the analysis about  
25 how those credits could be there and how they

1 **in terms of water rights, which is shown on  
2 figure 2, I would say, yeah, there's not much  
3 there.**  
4 Q. And, likewise, when we looked at scenario B on  
5 your figure 6 and -- and there wasn't much  
6 happening there, that's also because there's  
7 only about 14,900 acre-feet of water that the  
8 City can take between using its native rights  
9 and hitting the current limits, correct?  
10 **A. Yes.**  
11 Q. And so in that sense, all of that work that you  
12 did confirms the City's contention that once the  
13 City has pumped its native rights, it's only  
14 going to be able to access 14,900 acre-feet  
15 under the current limits?  
16 **A. Yes.**  
17 Q. So during the eight-year drought, any credits  
18 the City had beyond that 14,900 acre-feet, the  
19 City would not be able to recover or use during  
20 the drought?  
21 **A. Yes.**  
22 Q. So even if the City had put 50,000 acre-feet in  
23 physical recharge into the aquifer, if all of it  
24 but this 14, 9 was below the 1993 index limit,  
25 this 14, 9 is what the City could actually

1 could be available?  
2 **A. In terms of a hypothetical, it seems so.**  
3 Q. I mean, there was no consideration in that  
4 question of what had to happen for those credits  
5 to be present for the City to draw, was there?  
6 **A. It was just a question of making a larger  
7 diversion.**  
8 Q. Mr. Romero, in your figure 3, tell us again what  
9 that figure is depicting.  
10 **A. Okay. Figure 3 is a volumetric budget chart  
11 associated with my scenario B. So scenario B is  
12 looking at the amount of water that's produced  
13 if the City lowers the water level down to the  
14 current minimum index level after having taken  
15 out water already associated with the 40,000  
16 acre-foot per year water right over eight years.**  
17 Q. Okay. So this is showing -- this is showing  
18 impact with the current bottoms, and the maroon  
19 is what the City could pump after its native  
20 rights before hitting the current 1993 index  
21 limit, correct?  
22 **A. Yes.**  
23 Q. And there's not much there, is there,  
24 Mr. Romero?  
25 **A. Relative to the amount that's taken out for --**

1 recover during the drought under the current  
2 limits, correct?  
3 **A. Yes.**  
4 Q. Mr. Romero, in your figure 4, again, just  
5 refresh us on what that figure is showing.  
6 **A. So figure 4 is the next step of lowering water  
7 levels from the current minimum index level down  
8 to the proposed minimum index level. So the --  
9 the maroon area is illustrating the additional  
10 water that the wells produce in doing so. And  
11 the -- the blue band on the lower half is  
12 illustrating the amount of water that is  
13 depleted from rivers, from the Little Arkansas  
14 and the Arkansas, and the gray portion is  
15 illustrating the water that is removed from the  
16 aquifer.**  
17 Q. And in that -- with respect to that gray band,  
18 the 33,100 acre-feet that's being removed from  
19 the aquifer over that eight-year period, how  
20 would that impact the aquifer levels and the  
21 remaining saturated thickness in the aquifer?  
22 **A. That is actually depicted on my figure 6. On  
23 the right-hand side is scenario C, and that is  
24 illustrating drawdown that occurs in the upper  
25 box in the deep zone, which was model layer 2,**

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1 **and the lower box in the shallow zone, which is**  
 2 **model layer 1, there was a water table zone.**  
 3 **But the drawdown in both zones is about the**  
 4 **same.**  
 5 Q. So I'm going to have you go into a little bit  
 6 more detail on figure 6 to just explain what  
 7 those contour lines and black numbers are about,  
 8 what are those indicating?  
 9 **A. The -- on figure 6, the red contour lines are**  
 10 **drawdown to aquifer water levels, and the**  
 11 **numbers on each line are the numbers in feet of**  
 12 **drawdown of each contour.**  
 13 Q. So, for example, the center one with the little  
 14 black 5 on that contour line, that's indicating  
 15 that the area within that contour line has been  
 16 drawn down 5 feet?  
 17 **A. Yes.**  
 18 Q. And, likewise, with the contour line that has  
 19 the 1, wells along that contour have been drawn  
 20 down 1 foot?  
 21 **A. That's correct.**  
 22 **PRESIDING OFFICER:** And if I  
 23 understand it, 'cause I'm trying to keep  
 24 up, these would be in addition to the  
 25 drawdown caused under your scenario A?

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1 **A. Yes. Yes. So scenario A on the left-hand side**  
 2 **is the drawdown that's caused just by pumping**  
 3 **the water right. Scenario B is the drawdown**  
 4 **that's caused by draining out the remaining**  
 5 **water after the water right was taken out down**  
 6 **to the current index level. And it's not that**  
 7 **much drawdown, there are a couple small dots,**  
 8 **didn't take out very much water. And scenario C**  
 9 **is -- each one of these is additional.**  
 10 **PRESIDING OFFICER:** Gotcha, okay,  
 11 that's what I was thinking, okay.  
 12 **A. Yes. And by the time I get to figure 7, figure**  
 13 **7 is the cumulative amount of -- they're all**  
 14 **added up.**  
 15 **PRESIDING OFFICER:** Okay. Thank  
 16 you. Sorry to interrupt.  
 17 **BY MR. MCLEOD:**  
 18 Q. So as to -- as to the impact of lowering the  
 19 1993 index levels generally, that -- that  
 20 additional withdrawal that you've referred to or  
 21 additional diversions that you referred to, that  
 22 would enable the City to take -- the City could,  
 23 in fact, only take that if it had available  
 24 credits, correct?  
 25 **A. As I understand it, yes.**

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1 Q. Mr. Romero, you had discussed in your testimony  
 2 that a feature of the USGS model is to assume  
 3 streamflow and that sometimes in very dry  
 4 periods that assumption is not tied to facts on  
 5 the ground, correct?  
 6 **A. Yes.**  
 7 Q. Do you recall that the river package in the  
 8 model is at an annual time step, meaning that  
 9 the elevations in the river are simulated based  
 10 on an average and not on a daily or seasonal  
 11 basis?  
 12 **A. I do.**  
 13 Q. And if we were to assume that the rivers were  
 14 dry and just run the model with -- with no flow  
 15 in the rivers, wouldn't the impact of that, the  
 16 model solving for new lower index levels give us  
 17 a lower index level than if we assume flow in  
 18 the rivers?  
 19 **A. It would.**  
 20 Q. And we know that without running a sensitivity  
 21 analysis, we know that general -- that general  
 22 impact, don't we?  
 23 **A. We know it would be more effect to the aquifer,**  
 24 **yes.**  
 25 Q. Lest it be -- lest it be lost in the minutia,

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1 all of the minimum desirable streamflow impacts  
 2 were modeled by you on the premise of an  
 3 eight-year drought, correct?  
 4 **A. Yes.**  
 5 Q. And so among the root assumptions of the  
 6 modeling is that we're in that very dry period  
 7 for the entire eight years of the modeling,  
 8 correct?  
 9 **A. Yes.**  
 10 Q. And so that's -- that is modeling what would  
 11 happen in an occasional and transient scenario  
 12 that doesn't happen every year, correct?  
 13 **A. That typically does not happen every year, yeah.**  
 14 **I mean, it has happened in terms of a 1 percent**  
 15 **drought, that's how it's characterized, but it's**  
 16 **not typical.**  
 17 Q. You wouldn't expect it to happen frequently,  
 18 would you?  
 19 **A. You would not.**  
 20 Q. And I don't know if you were here for  
 21 Mr. Letourneau's testimony or part of it --  
 22 **A. I was here for the part this week. I was -- I**  
 23 **was here Tuesday.**  
 24 Q. Were you here for Mr. Letourneau's discussion of  
 25 DWR's administration of minimum desirable

1 streamflow and how they do that?  
2 **A. I don't recall him discussing that on Tuesday.**  
3 Q. Okay. I'm going to ask you to - I'll just put  
4 it as a hypothetical - to assume with me that  
5 Mr. Letourneau said that in general DWR polices  
6 minimum desirable streamflow through what he  
7 called real-time administration, that if there's  
8 a problem they will go out to the area and try  
9 to see what they can do to resolve it and to  
10 bring the streamflow back up in the river. And  
11 my question for you is doesn't it make more  
12 sense to approach and address a transient,  
13 occasional issue like minimum desirable  
14 streamflow that way than to deny every permit or  
15 every proposal that might, every 90 years or so,  
16 have some impact on minimum desirable  
17 streamflow?  
18 **A. I -- I think there's utility in assessing the**  
19 **effect and understanding it when you make a**  
20 **decision on a permit. So I -- in terms of**  
21 **presenting that information, which I typically**  
22 **do in this type of setting, it's presented so it**  
23 **can be considered. The way to handle that in**  
24 **terms of denial or administration is something**  
25 **for the Division of Water Resources to consider**

1 **aquifer, there would be more water in the**  
2 **stream, which would contribute to helping**  
3 **maintain minimum -- minimum desirable**  
4 **streamflow, yes.**  
5 Q. And looking at the two sets of issues at the  
6 planning stage as we're evaluating the proposal,  
7 would it not make sense to weigh both the  
8 benefit to minimum desirable streamflow in the  
9 long periods when the aquifer would be full  
10 against the potential adverse effects during the  
11 eight-year drought which could be policed by  
12 real-time administration if and when they occur?  
13 **A. In terms of the sensibility of making a decision**  
14 **on this permit, I'm sure that will be done in a**  
15 **sensible way. I -- I'm here to provide**  
16 **technical information that can be considered,**  
17 **whether it's considered positive or negative by**  
18 **any party.**  
19 Q. So you don't want to speak to how those benefits  
20 should be weighed?  
21 **A. Everything should be weighed, benefits and**  
22 **things that are not considered a benefit.**  
23 Q. Mr. Romero, in your figure, I think it's 7,  
24 might be 6 and 7 that show impacts on wells --  
25 let me actually back up and ask this question:

1 **in light of information, technical information**  
2 **that's presented.**  
3 Q. So they certainly could, I mean, in conjunction  
4 with their usual approach, they certainly could  
5 police what we've modeled here in the eight-year  
6 drought if and when it happens, couldn't they,  
7 by real-time administration?  
8 **A. Yes, and -- and having some information**  
9 **beforehand may provide some utility in**  
10 **considering the permit.**  
11 Q. It might help them to know what -- what the ASR  
12 contribution to the minimum desirable streamflow  
13 issue was at that point, mightn't it?  
14 **A. Absolutely.**  
15 Q. And -- and as we're -- as we're considering a  
16 proposal here at the front end, as you said, and  
17 looking at information for planning purposes,  
18 isn't it also important to consider what would  
19 be happening the majority of the time if the  
20 aquifer is managed full as a result of the City  
21 getting the changes that it wants, wouldn't  
22 minimum desirable streamflow be improved during  
23 the entire period that the aquifer is managed  
24 full?  
25 **A. If the water level is not lowered in the**

1 You -- you didn't personally verify any of the  
2 well information that you drew from the KGS  
3 database or that was provided to you by  
4 Intervenors, did you?  
5 **A. I didn't, I relied on the logs.**  
6 Q. Okay. In your figures that depict well impact,  
7 let's look at 7. If I'm understanding this  
8 correctly, of these wells that will be impacted,  
9 29 of the 36 wells would be impacted by the City  
10 pumping its full native rights, correct?  
11 **A. Yes.**  
12 Q. So that could happen now, it isn't part of the  
13 impact of the modifications requested by the  
14 proposal, is it?  
15 **A. That's correct.**  
16 Q. And, Mr. Romero, there was some discussion  
17 during your main testimony of wells losing or  
18 potentially losing their water column. When you  
19 schedule wells on this -- on this depiction as  
20 being impacted, do you mean in the case of all  
21 of them that they are potentially losing their  
22 water column?  
23 **A. I do.**  
24 Q. And because 29 of these wells would be affected  
25 by the City's -- by the City pumping its full

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1 native water rights, isn't there potential,  
 2 Mr. Romero, that if the City did that in order  
 3 to lower aquifer levels to the 1998 levels in  
 4 order to facilitate physical recharge, that  
 5 these 29 people who don't have any problem today  
 6 when the City's not pumping its full native  
 7 rights would then have a problem when the City  
 8 did that?  
 9 **A. Yes.**  
 10 Q. A problem they would not have if the City could  
 11 leave the aquifer full, or did leave the aquifer  
 12 full and did not draw its full native rights,  
 13 correct?  
 14 **A. Yes.**  
 15 Q. And as opposed to the interest of those 29  
 16 folks, there are six wells -- let me back up and  
 17 ask this: You didn't show any wells being  
 18 impacted by the -- by the middle scenario, the  
 19 scenario B. Is that because the pumping in  
 20 scenario B is so slight that it in and of itself  
 21 doesn't affect any additional well?  
 22 **A. It does cause a degree of drawdown but not**  
 23 **enough to cross the threshold of losing a well**  
 24 **water column.**  
 25 Q. Okay. So the six additional wells potentially

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1 impacted in scenario C, they are all impacted by  
 2 reducing the index level from the 1993 level to  
 3 the proposed index level?  
 4 **A. Yes.**  
 5 Q. Or -- or to be precise, I should say they would  
 6 be impacted if the City pumps down to that  
 7 proposed new index level, correct?  
 8 **A. Yes.**  
 9 Q. Counsel asked you a question, which was  
 10 allowed -- allowed over objection, that if we  
 11 defined impairment as a well losing its water  
 12 column, then would all of these wells be  
 13 impaired, and I think -- I think because he had  
 14 defined it so no other answer was possible you  
 15 said yes. Mr. Romero, what if we didn't define  
 16 impairment as a well losing its water column,  
 17 what if -- what if we assume that Kansas  
 18 actually had a regulation that says wells won't  
 19 be regarded as impaired unless the impacted well  
 20 fully penetrates the aquifer. Can you tell me  
 21 whether these six wells that would be impacted  
 22 by the change to the new lower index levels  
 23 fully penetrate the aquifer?  
 24 **A. Huh.**  
 25 **PRESIDING OFFICER:** I'm sorry, are

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1 you citing to an existing reg or were you  
 2 hypothesizing?  
 3 **MR. MCLEOD:** I was hypothesizing but  
 4 let me say that behind that hypothetical,  
 5 because I'm being ethical, there is a  
 6 regulation, K.A.R. 5-4-1.  
 7 **PRESIDING OFFICER:** And are you  
 8 quoting from that?  
 9 **MR. MCLEOD:** I'm not, I'm  
 10 paraphrasing, characterizing.  
 11 **PRESIDING OFFICER:** All right.  
 12 **MR. MCLEOD:** There wasn't an  
 13 objection, so I think I probably got it  
 14 reasonably well.  
 15 **BY MR. MCLEOD:**  
 16 Q. So you've probably become lost by now,  
 17 Mr. Romero?  
 18 **MR. ADRIAN:** Well, if he isn't, I  
 19 am. Yeah, I --  
 20 **BY MR. MCLEOD:**  
 21 Q. So if instead of assuming that impairment means  
 22 a well losing its water column, we assume that  
 23 there is in actuality a Kansas reg that says  
 24 impairment won't be found unless a well fully  
 25 penetrates the aquifer, can you tell me whether

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1 the six wells that would be impacted by lowering  
 2 the index levels fully penetrate the aquifer?  
 3 **MR. ADRIAN:** I think he's already  
 4 told us he has no knowledge of the -- of  
 5 the core drilling that was done, what the  
 6 wells look like, whether clay layers, he  
 7 has no way of knowing that, and it's --  
 8 it's well beyond his ability to even answer  
 9 that question.  
 10 **BY MR. MCLEOD:**  
 11 Q. So Counsel is suggesting that your answer would  
 12 be no. Is the answer no, you can't tell us  
 13 whether those wells fully penetrate the aquifer?  
 14 **A. If -- if legal counsel tells me let's assume**  
 15 **this definition, the definitions can be set up**  
 16 **so that I could say yes in one case and no in**  
 17 **another case.**  
 18 Q. Correct.  
 19 **A. Let me -- let me tell you how I think of this.**  
 20 **And I looked at well water columns, I compared**  
 21 **that to the amount of drawdown. In my report, I**  
 22 **did not describe impairment. I described that**  
 23 **there is potential for these wells to lose their**  
 24 **water column, and I described that as -- I think**  
 25 **of this as a statistical sample here because I**



1 **expect that there are more wells that are out**  
2 **there that were not considered in this analysis.**  
3 **I think there's potential for some wells to lose**  
4 **their water column, which would indicate some**  
5 **type of remedy would be needed, and that is --**  
6 **that's my testimony on that. And that's how I**  
7 **describe it in my report, and I think it's legal**  
8 **counsel's job to take that information and make**  
9 **your argument on impairment.**

10 Q. And, Mr. Romero, I -- I agree with you and I  
11 understand what you did in your report and I  
12 understand that you said impact in your report.  
13 But because Counsel for the District wanted you  
14 to say the wells were impaired, he defined  
15 impairment as the well losing its water column.  
16 And I'm asking you if that definition is wrong,  
17 then can you say whether these wells are  
18 impaired?

19 **A. I cannot. I can simply describe them as they**  
20 **lost their water column, I can describe the**  
21 **reason as to why the water column was lost, and**  
22 **that information should be considered.**

23 Q. And, Mr. Romero, have you been present during  
24 any of the witnesses' discussion of the topic of  
25 permit conditions?

1 modeled drawdown for the whole cell in which the  
2 well exists, right, the whole 400-by-400-foot  
3 cell, not the actual drawdown of any well?  
4 **A. Yes, the quantity in the 400-foot-by-400-foot**  
5 **cell.**

6 Q. And so, you know, if somebody's thinking about  
7 the 660-foot buffer as a protection of a nearby  
8 well from the drawdown of the City well that's  
9 in the 660-foot area, that's not really the  
10 drawdown we're concerned about here, is it?

11 **A. Can you say that again?**

12 Q. Let me try to put it this way: If the purpose  
13 of the 660-foot buffer zone around the City well  
14 was to protect other wells from the drawdown of  
15 that City well, right, that would not address  
16 the cell-wide drawdown that we're talking about  
17 here that has the potential to impact wells  
18 outside that 660-foot area, correct?

19 **A. Are you saying that if the protection -- I'm**  
20 **sorry.**

21 Q. Let me -- let me ask it this way.

22 **MR. ADRIAN:** Please.

23 **BY MR. MCLEOD:**

24 Q. If the original purpose -- I'll rephrase  
25 slightly. Does it seem likely to you that the

1 **A. I think I was present with -- for a little bit**  
2 **of discussion with -- when some City officials**  
3 **spoke a little bit about conditions, but I can't**  
4 **say that I'm completely familiar with all the**  
5 **permit conditions that are here.**

6 Q. Do you understand the general notion of permit  
7 conditions as allowing the permit to provide for  
8 some remedies for impacts, whether or not  
9 there's a legal impairment?

10 **A. Yes. Your question was, and I just want to**  
11 **clarify, your question was do I understand that**  
12 **that's something that can occur with conditions?**

13 Q. Yes.

14 **A. Yes.**

15 Q. I wasn't asking you to opine on whether the --

16 **A. Yeah.**

17 Q. -- whether the current or any proposed  
18 conditions do that, but it's a purpose of permit  
19 conditions, correct?

20 **A. Yes.**

21 Q. And I think I understand, but I want to go  
22 through briefly your testimony about the  
23 660-foot buffer area. Because you used the term  
24 drawdown with respect to impacts on the wells,  
25 and you're talking about the modeled -- the

1 original purpose of the 660-foot buffer zone  
2 around a City well, each City well was to  
3 protect other wells specifically from the  
4 drawdown of that City well?

5 **A. Oh, I'm following you. If -- if -- you're**  
6 **talking about it in terms of one well?**

7 Q. Yes.

8 **A. Yes. I understand that point, can you continue**  
9 **with your question, then?**

10 Q. And -- and if that's how those 660-foot zones  
11 were conceived, then it makes perfect sense that  
12 they don't protect wells that are -- that are  
13 affected by the cell-wide drawdown, right, which  
14 is not coming from the well in the center of the  
15 buffer zone?

16 **A. I wouldn't characterize it in terms of the**  
17 **cell-wide drawdown; I would characterize it in**  
18 **terms of additional wells, additional City wells**  
19 **in the area. I think what's happening is if --**  
20 **if that regulation was originally conceived or**  
21 **developed to think about one well having an**  
22 **impact on a well that's within 660 feet away, I**  
23 **think the thing to recognize here is that there**  
24 **are multiple City wells and the drawdown from**  
25 **each well carries out further than 660 feet.**

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1 **And so there's interference from multiple wells**  
 2 **that are here. So if that -- if that regulation**  
 3 **was originally set up to account for a single**  
 4 **well, then there certainly is an issue that**  
 5 **there are multiple wells here and multiple wells**  
 6 **are causing interference within the basin**  
 7 **storage area.**  
 8 Q. And because it's a cumulative impact of multiple  
 9 wells, that's why the 660-foot buffer doesn't  
 10 work, correct?  
 11 **A. That -- that would be one reason. Another**  
 12 **possible reason is that that regulation may have**  
 13 **been constructed for a particular area with**  
 14 **particular aquifer properties, and the aquifer**  
 15 **properties here may be somewhat different. So**  
 16 **that may be another reason. So I don't know how**  
 17 **that regulation was -- was put together, but I**  
 18 **am familiar with similar type of regulations**  
 19 **where they'll consider aquifer properties in a**  
 20 **particular area and decide well spacing based on**  
 21 **aquifer properties and drawdown that occurs.**  
 22 **So assuming that -- that something like**  
 23 **that was done to come up with that regulation,**  
 24 **if it considered just one well, there are**  
 25 **multiple wells here that are interfering. And**

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1 **the point that I just wanted to clarify is that**  
 2 **you can have neighboring wells in the area that**  
 3 **are further than 660 feet away that are**  
 4 **impacted.**  
 5 Q. And -- and because of the facts that you  
 6 discussed, right, in terms of figuring out what  
 7 to do with this in permit conditions, simply  
 8 drawing a bigger circle around each City well,  
 9 that would not be a rational solution, would it?  
 10 **A. That would not be rational. In fact, one thing**  
 11 **I've done in a similar sort of setting, it**  
 12 **related to wellhead protection areas, trying to**  
 13 **protect individual wells, and -- but you run**  
 14 **into a well field for a city, for example, and**  
 15 **you want to have a wellhead protection area for**  
 16 **that. One thing I've done is rather than having**  
 17 **a buffer around individual wells is I've made a**  
 18 **buffer around an entire well field. And the way**  
 19 **that you just described the buffer would be**  
 20 **analogous to that. Perhaps a buffer around an**  
 21 **entire well field, that's something that would**  
 22 **be more appropriate.**  
 23 Q. So if you were crafting a permit condition to  
 24 extend a remedy and you wanted to extend the  
 25 remedy to wells that would be impacted by

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1 lowering the 1993 index levels, how would you  
 2 craft that condition for this well field?  
 3 **A. First off, I'd want to think about it in more**  
 4 **detail than I am just right at the moment, but**  
 5 **in terms of thinking of it right now, I think**  
 6 **having a buffer around maybe the whole well**  
 7 **field would be a more appropriate place to start**  
 8 **thinking about it.**  
 9 Q. In your chloride migration discussion, you again  
 10 looked to the -- to one of the double pumping  
 11 scenarios that the USGS study had done and you  
 12 didn't -- you indicated that you had separately  
 13 modeled but you didn't show your results in the  
 14 depiction since you thought they were very  
 15 similar to what the existing USGS graphic  
 16 showed. My question is did you -- did you  
 17 compare the volume of their double pumping  
 18 scenario to -- to the modeled volume of the City  
 19 pumping where the 1993 limits were lowered?  
 20 **A. I didn't.**  
 21 Q. So when you did your -- did your modeling, did  
 22 an interface you were using give you a graphical  
 23 representation of the result that enabled you to  
 24 conclude that it was similar to the USGS result?  
 25 **A. Yes.**

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1 Q. Okay. In that graphical depiction, where is  
 2 most of the chloride movement occurring?  
 3 **A. Most of the chloride movement was occurring at**  
 4 **the location very similar to what we see on my**  
 5 **figure 8, and it's in the southern part of the**  
 6 **central Wichita well field, which is indicated**  
 7 **by a red polygon, but it's just north of the**  
 8 **Arkansas River; it's where you see the color**  
 9 **bands have the most displacement. I saw most of**  
 10 **the displacement occurring in the same area,**  
 11 **very similar area.**  
 12 Q. And is that -- is that suggesting to you that  
 13 the chloride source in that area would be the  
 14 river?  
 15 **A. There is a chloride -- yes, it is suggesting to**  
 16 **that, and data shows that there is elevated**  
 17 **chloride levels along the Arkansas River there.**  
 18 Q. And in terms of trying to ascertain well  
 19 impacts, the impacted wells would be those  
 20 between the baseline contour on the map and the  
 21 contour representing the double pumping with  
 22 existing irrigation contour?  
 23 **A. Generally, yes.**  
 24 Q. And did you assess how many wells were in that  
 25 area between those contours?

1 **A. I did not.**

2 Q. And, Mr. Romero, the contours on the map, they  
3 don't -- they don't show us the extent of the  
4 chloride contamination, do they, in terms of how  
5 many parts per million?

6 **A. They do not. They just show us the extent of  
7 the change associated with the pumping.**

8 Q. And the change that they're looking at is  
9 actually movement of chloride components,  
10 correct?

11 **A. That's correct.**

12 Q. It's generally true -- let me back up. I think  
13 you indicated in your main testimony that  
14 pumping by City wells could induce chlorides or  
15 other compounds toward the pumping wells?

16 **A. Yes.**

17 Q. And that could also be moving those same  
18 constituents away from pumping wells, couldn't  
19 it?

20 **A. It would depend on where the starting point of  
21 your constituents is.**

22 Q. And anybody else's pumping wells could also move  
23 sub -- subsurface constituents in the aquifer,  
24 couldn't they?

25 **A. Yes.**

1 impacts in water?

2 **A. In general. My work doesn't focus on treatment;  
3 it focuses on identifying migration.**

4 Q. Okay. I want to clean something up because I  
5 think the record was badly distorted by  
6 objection and response. Mr. Adrian had asked  
7 you a question about whether -- whether chloride  
8 migration would impair the wells depicted as  
9 impacted, I would assume he meant in that USGS  
10 exhibit we were looking at. And Counsel for DWR  
11 objected because, of course, there's a legal  
12 concept of impairment as we've discussed. And  
13 then Counsel for the District noted that he  
14 assumed that their previous definition stands,  
15 and you answered the question that it would  
16 impair the wells. But bearing in mind  
17 that their previous definition was a  
18 quantity-directed definition that the wells are  
19 losing their water column, right, that's how  
20 they define impairment?

21 **A. Ah.**

22 Q. You're not saying that these wells are going to  
23 lose their water column because of chloride  
24 migration, are you?

25 **A. I am not. I -- I didn't intend that, I just**

1 Q. Would it be reasonable for everybody to just  
2 shut off and stop using their wells because it  
3 might move subsurface constituents?

4 **A. Not in a context when people need water. I have  
5 seen some cases where an entire City well field  
6 is contaminated with -- with some very bad  
7 constituents and cases where that groundwater is  
8 pumped, treated, and actually served to  
9 customers.**

10 Q. Mr. Romero, have you had any experience on  
11 projects for chloride mitigation?

12 **A. Yes.**

13 Q. And what did those involve, what -- what did  
14 your work involve?

15 **A. It involved closing down a mine, and there was  
16 an area where there was some mine tailings that  
17 were put into a contained area and sealed and it  
18 involved tracking multiple constituents, one of  
19 which was chloride migration from there. That's  
20 one.**

21 Q. So it was -- in that instance, it was basically  
22 tracking work?

23 **A. Yes.**

24 Q. Are you aware of any types of treatment systems  
25 that can be used to actually remediate chloride

1 **thought of it -- you're quite correct, I did not  
2 intend that, yes.**

3 Q. And under that formulation, the way they  
4 actually gave it to you and with that  
5 definition, you wouldn't be able to say that  
6 these wells are impaired by chloride  
7 contamination, would you?

8 **A. I -- I could not say it in terms of impairment.  
9 I could -- I could say that water quality could  
10 be degraded.**

11 Q. And in order to know whether that water quality  
12 degradation would approach a level impacting the  
13 practical use of water, would you have to know  
14 the specific concentration of the chloride  
15 contamination and how it relates to drinking  
16 water standards for chloride contamination?

17 **A. Yes, that would be one standard way to do it.**

18 Q. Do you know those things?

19 **A. Yes, I do know them.**

20 Q. And do you know -- do you know enough of those  
21 things for this area in order to form an opinion  
22 on whether drinking water standards are going to  
23 be abrogated by the chloride migration shown in  
24 the exhibit?

25 **A. I'd say there's potential for that to occur.**

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1 **The -- the contour lines that are illustrated**  
 2 **here are the 250 milligram per liter chloride**  
 3 **concentration, which is a secondary standard in**  
 4 **drinking water standards, and so the chloride**  
 5 **migration is occurring in areas where there are**  
 6 **wells. The analysis the USGS did was**  
 7 **preliminary, I think it identifies potential,**  
 8 **and so that is the reason that I recommend**  
 9 **continuing with that type of work to better**  
 10 **understand it in the context you're describing.**  
 11 Q. Mr. Romero, would the pumping of irrigation  
 12 wells, including wells that might be on a  
 13 five-year flex account, impact migration of  
 14 contaminants during a drought?  
 15 **A. I anticipate that it would.**  
 16 Q. Were those impacts considered in your analysis,  
 17 or did you look only at the impacts of the  
 18 City's wells?  
 19 **A. I looked only at the impacts of the City's wells**  
 20 **in the context of the proposal and my example**  
 21 **simulations.**  
 22 Q. Mr. Romero, I mean, you had indicated somewhat  
 23 in your main testimony that when a water user  
 24 turns off -- shuts off their pumping, even after  
 25 the pumping is stopped, because of the cone of

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1 depression from the well that was made while the  
 2 well was operating, there is still going to be a  
 3 period during which the adjacent river will be  
 4 depleted as streamflow from that river will seep  
 5 into the aquifer to fill that cone of  
 6 depression, correct?  
 7 **A. That's correct.**  
 8 Q. And does the fact that that -- the stream water  
 9 is doing that, is that not recharging the  
 10 aquifer, and is that not helpful to the other  
 11 users of the aquifer that that's occurring?  
 12 **A. That -- that water is recharging the aquifer,**  
 13 **and to the extent that there are not issues with**  
 14 **quality of the water that's recharging it, it's**  
 15 **generally beneficial.**  
 16 Q. Counsel asked you about figure 16 in the City's  
 17 proposal, if you would turn back to that just to  
 18 be refreshed on what we're discussing.  
 19 **A. I'm sorry, back to which one?**  
 20 Q. Figure 16, it shows a couple of green lines  
 21 trending upwards --  
 22 **A. Oh, in the proposal.**  
 23 Q. -- and addresses the disparity between physical  
 24 and AMC recharge accounting.  
 25 **A. Yes.**

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1 Q. Okay. And Counsel had asked you a series of  
 2 questions suggesting to you that that -- that  
 3 that variance is occurring because of some kind  
 4 of mathematical error. And I know you weren't  
 5 here during all of Mr. McCormick's testimony.  
 6 Were you here the day that Mr. McCormick was  
 7 addressing this figure and why those lines are  
 8 diverging?  
 9 **A. I was not here for any of Mr. McCormick's**  
 10 **testimony actually.**  
 11 Q. Okay. So I'm going to hopefully get this right  
 12 from the record. If Mr. McCormick testified  
 13 that the AMC accounting assumes leakage based on  
 14 1998 water levels, a time at which -- a  
 15 condition under which 95 percent of recharge  
 16 would be retained in the aquifer, and that the  
 17 purpose of assuming that for AMCs is not to  
 18 punish the City for letting the water -- letting  
 19 the aquifer be more full where actual leakage is  
 20 going to be much greater. And if Mr. McCormick  
 21 explained that that's one of the reasons, indeed  
 22 the primary reason, why those lines on the graph  
 23 are at variance with one another, would that  
 24 make sense to you that it could be due to that  
 25 and not some kind of a mathematical error that

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1 needs to be refined?  
 2 **MR. ADRIAN:** You know, I'm going to  
 3 object to that, I -- that was a very  
 4 detailed account of testimony that came  
 5 from Mr. McCormick. Perhaps we could take  
 6 the time to find that testimony and read it  
 7 back so that he's actually responding to  
 8 what Mr. McCormick actually said, because I  
 9 have no idea that you were right or wrong  
 10 in what you said.  
 11 **PRESIDING OFFICER:** There were a lot  
 12 of dependent clauses in what you said.  
 13 **MR. ADRIAN:** Yeah.  
 14 **BY MR. MCLEOD:**  
 15 Q. Let me try to rephrase it. Mr. Romero, do you  
 16 see any explanatory text with that figure that  
 17 addresses why those lines might -- might not be  
 18 together as conditions in the aquifer are more  
 19 full?  
 20 **A. I'm sorry, I need to go back and -- and look at**  
 21 **that, it's been awhile since I've looked at**  
 22 **that.**  
 23 **PRESIDING OFFICER:** It's about  
 24 10:30. If he needs to take some time to  
 25 look at something, this might be a good

1 time for a break.  
2 **MR. MCLEOD:** That's okay with me.  
3 **PRESIDING OFFICER:** Let's take a  
4 ten-minute break.  
5 (Thereupon, a recess was taken;  
6 whereupon, the following was had.)  
7 **PRESIDING OFFICER:** Okay. We're  
8 back on the record now. Mr. McLeod.  
9 **BY MR. MCLEOD:**  
10 Q. Yes, if the witness would flip to figure 16,  
11 what we were looking at with the two lines. And  
12 I was incorrect about there being any kind of  
13 explanatory legend on that graph to serve the  
14 purpose, so I will ask the reporter to do as  
15 Mr. Adrian suggested and read back some  
16 testimony of Paul McCormick.  
17 (At this time, the reporter read  
18 from Volume V, page 1186, line 15  
19 to page 1187, line 11.)  
20 **BY MR. MCLEOD:**  
21 Q. Okay. I think that testimony from Mr. McCormick  
22 reflected that in the AMC accounting the leakage  
23 that is used is not actual leakage per the model  
24 but what leakage would be if the aquifer were at  
25 a state where the City could physically recharge

1 that 30 million gallons a day. So it's a  
2 constructive number. Mr. Romero, would the use  
3 of that constructive assumption in the AMC  
4 accounting, while the physical recharge credits  
5 are being accounted for with actual leakage via  
6 the model, explain to you the difference between  
7 where those two lines are going on that figure  
8 even if there is no mathematical error?  
9 **A. That is something that serves to explain some  
10 difference there, to my mind. One thing I will  
11 clarify, you know, I described in my report to  
12 consider looking at a way to improve that; I  
13 hadn't thought about the extent of explanations  
14 that could explain the difference, I was  
15 thinking of it as there's a simplified approach  
16 that's being proposed. If the simplification  
17 could be made just a little more rigorous to  
18 help improve that that would be something to  
19 consider. And in the section of my report where  
20 I describe that, I, you know, I indicate that I  
21 am not entirely familiar with the whole process  
22 of putting that together, so there certainly  
23 could be some explanation that I was not  
24 familiar with. And I see that testimony as a  
25 form of that explanation.**

1 Q. Thank you, Mr. Romero. In streams, indeed in  
2 aquifers and any source of water with chloride  
3 issues, do the chloride levels vary up and down?  
4 **A. Generally, in a lot of areas.**  
5 Q. And particularly in streams, would you expect  
6 chloride levels in streams to be affected by  
7 seasonal conditions such as heat evaporation and  
8 precipitation?  
9 **A. Yes. Precipitation can tend to have a diluting  
10 factor, and evaporation can have a concentrating  
11 sort of factor.**  
12 Q. And also depending on what constituents the  
13 stream may be passing through, the stream might  
14 be picking up or depositing?  
15 **A. Absolutely.**  
16 Q. And all of those things would not be constant  
17 over time, correct?  
18 **A. Correct.**  
19 Q. Do you know, Mr. Romero, if to try to deal with  
20 those issues in the USGS chloride model, did the  
21 chloride loading of the source term for the  
22 Arkansas River overestimate based on the use of  
23 annual time step versus seasonal elevated  
24 chloride concentrations in the actual system?  
25 **A. It would depend. In some cases, an annual**

1 **average could translate to a general  
2 overestimate or an underestimate. But -- but  
3 I -- I'll stress that their work was described  
4 as preliminary. One of the recommendations that  
5 they had was to -- see, I mentioned earlier that  
6 you have a flow model that represents how  
7 groundwater moves and how it's connected to  
8 rivers, but then you attach to that a component  
9 that considers transport of chloride in this  
10 case. And some calibration was done on the  
11 transport model.**  
12 The next step that the USGS wanted to do  
13 was to go back and do some additional  
14 calibration to the flow model, and that was  
15 never done. So thinking about overestimates or  
16 underestimates in their work at a pre -- it was  
17 pretty much at a preliminary level. Oftentimes  
18 you rare -- actually, you don't see preliminary  
19 work published by the USGS that often. This  
20 work actually has the term preliminary as the  
21 first word in the title. So I just -- I'll be  
22 cautious about drawing too many conclusions  
23 about it.  
24 Q. And then as far as the arsenic issue that  
25 Counsel brought up, Mr. Romero, as a general

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1 matter, I think you recognize that arsenic could  
 2 potentially migrate as a dissolved constituent?  
 3 **A. Yes.**  
 4 Q. Did you look at absorption or any detailed  
 5 transport modeling to come to any conclusions on  
 6 how arsenic moves in this aquifer?  
 7 **A. I did not.**  
 8 Q. Would pumping agricultural wells move chloride  
 9 from the Burrton plume?  
 10 **A. Wells that -- in general, yes, wells that are**  
 11 **not right at the site, wells that are away from**  
 12 **the site, they can induce migration of chloride**  
 13 **away from the site, yes.**  
 14 Q. As I brought up with respect to the minimum  
 15 desirable streamflow, in the same way that the  
 16 District's -- the District's positions on  
 17 chloride modeling are all concentrating on the  
 18 period of drought. Did you run any analyses for  
 19 chloride migration in terms of benefits from the  
 20 proposal, such as keeping the aquifer full for  
 21 extended periods of time?  
 22 **A. I did not. I only ran scenarios A, B, and C**  
 23 **that are contingent on the drought.**  
 24 Q. And based on your experience and knowledge of  
 25 chloride migration, would keeping the aquifer

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1 full have a tendency to slow chloride migration  
 2 in the aquifer?  
 3 **A. It would, and that's also a conclusion that's**  
 4 **drawn by the USGS.**  
 5 Q. I don't have further questions for the witness.  
 6 Thank you, Mr. Romero.  
 7 **A. Thank you.**  
 8 **PRESIDING OFFICER:** Mr. Oleen.  
 9 **MR. OLEEN:** One moment.  
 10  
 11 **CROSS-EXAMINATION**  
 12 **BY MR. OLEEN:**  
 13 Q. Mr. Romero, I believe there was a line of  
 14 questioning about to what extent your expert  
 15 report and modeled scenarios took into account  
 16 other non-Wichita pumpers in this well field  
 17 area, and I thought I wrote down that you said  
 18 that you looked only at the impact of the City's  
 19 wells in that context. Was that your testimony,  
 20 is that correct?  
 21 **A. That's correct, the -- you're talking about**  
 22 **scenarios A, B, and C in my example simulations?**  
 23 **Those simulations are isolating the effects from**  
 24 **City wells.**  
 25 Q. And just for my edification, where in your

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1 report, I'm not saying it's not in here, but  
 2 where in your report do you write out what you  
 3 just said in the sense that your analysis  
 4 excludes pumping from non -- pumping by -- from  
 5 water right owners other than the City?  
 6 **A. Let me -- let me clarify that. The modeling**  
 7 **does include pumping from others in the**  
 8 **simulation, but the results that I present --**  
 9 **the overall analysis includes pumping from**  
 10 **others besides the City, but I ran the model in**  
 11 **a certain way so that I could isolate the effect**  
 12 **of the City's wells while other wells are also**  
 13 **pumping.**  
 14 Q. And to refresh my memory, or inculcate me in the  
 15 first instance, when you say that the modeling  
 16 you used, I think you just said assumes pump --  
 17 certain pumping from others --  
 18 **A. Uh-huh.**  
 19 Q. -- can you give me more detail of that  
 20 assumption?  
 21 **A. Yes. It's -- it's actually that pumping is as**  
 22 **it was specified in the model files that were**  
 23 **provided by Burns & McDonnell. So, actually,**  
 24 **the detail of those quantities of pumping as**  
 25 **described in the proposal, there were some**

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1 **adjustments that were made to the model to**  
 2 **account for, you know, evapotranspiration,**  
 3 **recharge, pumping in the area, and it was based**  
 4 **on data from years 2011 and 2012. So all the**  
 5 **description that's in the proposal, that's the**  
 6 **same as -- those are the same files that I used.**  
 7 **The only thing that I did in my -- in my**  
 8 **scenarios is I changed the City pumping**  
 9 **somewhat. So in the drought -- in the 1 percent**  
 10 **drought scenario, Burns & McDonnell represents**  
 11 **the City's pumping -- pumping its native water**  
 12 **right 40,000 acre-feet, not every single year**  
 13 **but quantities that are very close to that,**  
 14 **except for the very first year, maybe it's like**  
 15 **6,000 acre-feet different the first year. I**  
 16 **changed that to just make it be 40,000 across**  
 17 **the board. And so I -- so I could see what**  
 18 **happens when -- and then I ran the model in a**  
 19 **certain way to just isolate the effect of**  
 20 **pumping that 40,000 in scenario A.**  
 21 **It actually involves running the model in a**  
 22 **case where the City is pumping 40,000 acre-feet**  
 23 **per year and then another simulation where it's**  
 24 **not, and you take the difference in the results**  
 25 **and it isolates the effect of that 40,000. But**

1 **it happens while there's other pumping and**  
2 **drought conditions that are represented in the**  
3 **model.**

4 Q. Thank you. On the issue -- on the issue of the  
5 City -- what's been referred to as the City's  
6 40,000 acre-feet of, quote, native water rights,  
7 are you familiar with what is being referred to  
8 when that has been termed that way?

9 **A. Yes.**

10 Q. Okay. So just so I understand -- I kind of want  
11 to understand what I'll call the gist of  
12 paragraph 7 in your report on page 12.

13 **A. Let's see, page 12 of my report?**

14 Q. Yes.

15 **A. Oh, yes.**

16 Q. So you say in here that, and I quote, the result  
17 indicates that up to 35 wells are identified  
18 with potential to lose capacity to produce water  
19 from the total drawdown.

20 **A. Yes.**

21 Q. Can you tell me again what you meant by the  
22 phrase potential to lose capacity?

23 **A. I mean that in the simulation that I ran, those**  
24 **35 wells did lose their water column. There was**  
25 **more drawdown than the water column in the**

1 **for wells to lose their well water, for wells to**  
2 **be impacted.**

3 **Since it did happen to some of them, and I**  
4 **say some because I may not have all the wells**  
5 **that are out there, it's looking like that**  
6 **statistical sample that I had, there was more**  
7 **drawdown in the well water columns that are**  
8 **there. So in that context, my conclusion is**  
9 **that there is potential for some wells to**  
10 **require a remedy.**

11 Q. Okay. And just to be clear for me, the phrase  
12 lose capacity or, quote, are impacted, as used  
13 in this paragraph --

14 **A. Yes.**

15 Q. -- those both mean loss of well water column --

16 **A. Yes.**

17 Q. -- right?

18 **A. Yes.**

19 Q. And that means the water level has become lower  
20 than the bottom of the well?

21 **A. Yes.**

22 Q. And so you note that of the 35 wells, the known  
23 wells as you have explained --

24 **A. Yes.**

25 Q. -- 29 are impacted from the City pumping

1 **wells. I actually reduced the water column by**  
2 **10 feet to allow 10 feet for pump submergence**  
3 **and positive suction head. So with that**  
4 **assumption, when I run this scenario, there are**  
5 **35 wells that the drawdown exceeds that water**  
6 **column.**

7 **So as I described before, I think that the**  
8 **model is useful for getting an understanding of**  
9 **what happens in well areas. I don't report that**  
10 **exactly these wells -- or something that you**  
11 **should go do something about them right now. I**  
12 **indicate that -- what my conclusion is that we**  
13 **have a sample of wells here, and I looked at how**  
14 **much drawdown results from the City pumping, and**  
15 **these wells lose their water column. That**  
16 **identifies to me that there's potential for**  
17 **wells in the area to lose their water column.**

18 **If I had run the model and maybe just 10 or**  
19 **20 percent of the drawdown -- the drawdown had**  
20 **maybe taken up 10 or 20 percent of all the well**  
21 **water columns in the area - I think of these**  
22 **wells as a sample of wells that are out there -**  
23 **and if the drawdown only eats up 10 or**  
24 **20 percent of the well water columns, then I**  
25 **would say it doesn't look like there's potential**

1 40,000 acre-feet per year?

2 **A. Yes.**

3 Q. And is it your understanding that the City  
4 already is authorized to withdraw 40,000  
5 acre-feet per year below the current minimum  
6 index cell levels?

7 **A. I'm aware of that.**

8 Q. So moving on in this sentence, then you say, six  
9 are identified to be impacted from the City  
10 diverting ASR recharge credits down to the  
11 proposed minimum index level?

12 **A. Yes.**

13 Q. I think you've been very clear in your writing  
14 here, but I just want to confirm that you are  
15 concluding in this paragraph, then, that if  
16 Ms. Owen recommends that the current minimum  
17 index levels be lowered to the new proposed  
18 bottoms and that is approved by the chief  
19 engineer and the City of Wichita withdraws  
20 accumulated recharge credits down to that newer,  
21 lower, I should say, bottoms or minimum index  
22 cell level --

23 **A. Proposed minimum index level.**

24 Q. Thank you. -- then to your knowledge, based on  
25 the known wells that you considered, there are

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1 only six wells that have the potential to, as  
 2 you say, lose their water column?  
 3 **A. There -- there are six wells based on the wells**  
 4 **that were available in the database.**  
 5 **PRESIDING OFFICER:** But was that  
 6 after pumping the 40,000 acre-feet?  
 7 **A. That's correct.**  
 8 **PRESIDING OFFICER:** I didn't hear  
 9 that in all of your conditions of your  
 10 question.  
 11 **BY MR. OLEEN:**  
 12 Q. Yes, I'm -- I'm trying to make a distinction  
 13 between what the City already has authorization  
 14 to do, which is withdraw the 40,000 acre-feet  
 15 native water rights below --  
 16 **PRESIDING OFFICER:** So isolating  
 17 that?  
 18 **MR. OLEEN:** Yes.  
 19 **PRESIDING OFFICER:** Okay, sorry.  
 20 **A. That's actually the reason that I broke out**  
 21 **water right pumping from credit pumping so that**  
 22 **these kinds of discussions could be had.**  
 23 **BY MR. OLEEN:**  
 24 Q. You also say in the next sentence, in  
 25 paragraph 7 of your report on page 12, and you

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1 just also orally repeated it, the phrase require  
 2 remedy, or you used the phrase remedy. And  
 3 actually the sentence says, this observation  
 4 indicates that some wells in the area can be  
 5 reasonably anticipated to require a remedy  
 6 associated with lowering water levels to the  
 7 proposed minimum index level. Did I read that  
 8 correctly?  
 9 **A. Yes. And that statement is intended to say**  
 10 **that -- it says some wells in the area. I**  
 11 **didn't explicitly say six because I just found**  
 12 **that it can happen to some wells and I don't**  
 13 **know how many because I don't have all the --**  
 14 **all -- I didn't account for all the wells that**  
 15 **are out there, is what I expect since it was a**  
 16 **database post 1975.**  
 17 Q. Understood. And -- and I think you've already  
 18 alluded to this, if not expressly said it, but I  
 19 just want to be clear that when you say  
 20 anticipated to require a remedy, you're not  
 21 giving any opinion on who, if anyone, should  
 22 provide that remedy?  
 23 **A. I did not write that up.**  
 24 Q. You're not -- it's not your opinion testimony  
 25 today that Wichita should provide that remedy?

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1 **A. You know, I -- other situations that I've seen**  
 2 **like this, I have seen an applicant file a plan**  
 3 **of replacement because it -- I've seen other**  
 4 **areas where it's typical to identify the effects**  
 5 **of the application, and that plan of replacement**  
 6 **is usually filed by the applicant, if -- if it's**  
 7 **found that approving the application could**  
 8 **affect wells, file a plan for replacement water.**  
 9 **I've seen that sort of thing done. I'm not here**  
 10 **today to say who should do it, but this is an**  
 11 **application filed by the City and -- does that**  
 12 **answer your question?**  
 13 Q. It answers some of it, yes, and let me pose a  
 14 second one to you. You're also not, excuse me,  
 15 here to opine on what Kansas law may require, if  
 16 anything, as to such a remedy; is that correct?  
 17 **A. I'm not here to opine on that.**  
 18 Q. And you don't have an opinion on that here  
 19 today, correct?  
 20 **A. Yeah, I'm -- I'm providing technical information**  
 21 **so that that can be -- those kinds of questions**  
 22 **can be opined on by others.**  
 23 Q. I believe that Counsel for the City asked you  
 24 generally about considering this eight-year  
 25 1 percent drought scenario and water levels

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1 claimed at that period versus the other times  
 2 when we're not in such a drought. And I think  
 3 Counsel asked you a general question of whether  
 4 keeping the aquifer levels in this area more  
 5 full would better keep river flows above MDS,  
 6 and I think you said yes; is that correct?  
 7 **A. Yes.**  
 8 Q. And I think you also said that in the same  
 9 general sense, keeping the aquifer levels fuller  
 10 would better reduce or prevent chloride  
 11 migration; is that also correct?  
 12 **A. Yes.**  
 13 Q. In terms of risks to water quality, such as  
 14 perhaps chloride migration, for example, isn't  
 15 it true that it's better to leave water at  
 16 higher levels than to have a fluctuating  
 17 withdrawal, replacement, withdrawal, replacement  
 18 of that water?  
 19 **A. If you're trying to prevent migration of**  
 20 **chloride from the area of Burrton and the area**  
 21 **of the Little Arkansas, maintaining higher water**  
 22 **levels that don't change prevents migration more**  
 23 **than if you cycle water levels up and down.**  
 24 **MR. OLEEN:** Thank you, no further  
 25 questions.



1 **A. One last thing. The USGS has concluded that**  
2 **there -- migration is occurring and not lowering**  
3 **water levels slows that process down.**

4 **MR. OLEEN:** Thank you.

5 **PRESIDING OFFICER:** Ms. Wendling.

6  
7 **CROSS-EXAMINATION**

8 **BY MS. WENDLING:**

9 Q. We've just got the two models, MODSIM and  
10 MODFLOW, did you review both of these or only  
11 one of those?

12 **A. I did not review MODSIM; I only reviewed and**  
13 **worked with MODFLOW.**

14 Q. And were you given files for both or only  
15 MODFLOW?

16 **A. Only MODFLOW.**

17 Q. You've described using, I believe, on page 4 of  
18 your report, the MNW package?

19 **A. Yes.**

20 Q. Can you tell me what that is?

21 **A. Yes, that is a -- it's a -- different components**  
22 **in MODFLOW are typically termed as packages.**  
23 **The MNW is -- stands for Multi-Node Well, and so**  
24 **it's a package that is developed for**  
25 **representing wells that penetrate multiple**

1 **that illustrates the current minimum index**  
2 **level, I took that and interpolated it into the**  
3 **model, and I put that at the City wells, I put**  
4 **that elevation at the City wells, and then I**  
5 **just turned them on. And what happens is that's**  
6 **how in scenario B I was able to drain the amount**  
7 **of water that's there to pull water levels down**  
8 **to the current minimum index level. So that**  
9 **becomes the stopping point.**

10 **And then in another simulation I took that**  
11 **level in the Multi-Node Well package and set it**  
12 **at the proposed minimum index level to see how**  
13 **you would drain the water out of that segment.**  
14 **And so that's how I did the analyses. So that's**  
15 **a modeling component that is designed for**  
16 **simulating pumping wells and figuring out how**  
17 **much water can be produced, and I used that in**  
18 **the context of the current and proposed minimum**  
19 **index levels to create those charts.**

20 Q. Okay. And in your report where you talk about  
21 well yield, that's the amount of water that can  
22 be produced?

23 **A. Yes, and in those charts, that would be the**  
24 **maroon portion, which is the water that's**  
25 **produced, or the yield from the wells, yes.**

1 **aquifers.**

2 **And it's something that actually accounts**  
3 **for the pumping water level inside of the well**  
4 **that you're simulating, so what you can do with**  
5 **that particular package is you can put a water**  
6 **level in the well that you don't allow water**  
7 **levels to drop below because you want to leave a**  
8 **section of submergence for your pump. You know,**  
9 **out in practice, if you pump your well too hard,**  
10 **more -- at a rate more than it can provide or if**  
11 **water levels decline, you'll start sucking air**  
12 **with your pump, and you get cavitation and you**  
13 **damage your pump. The Multi-Node Well package**  
14 **allows you to specify a level to prevent water**  
15 **levels from dropping that low. In practice, if**  
16 **you start getting cavitation in your pump, you**  
17 **turn the rate down. Well, the model will do the**  
18 **same sort of thing, it'll reduce the pumping**  
19 **rate when the water level gets to that**  
20 **elevation.**

21 **The reason I used that for the analysis is**  
22 **because I could take the Multi-Node Well package**  
23 **and I could specify that elevation to be the**  
24 **current minimum index level. So I went to the**  
25 **proposal, and there's a table in there that --**

1 Q. On figure 2 of your -- you talk about river  
2 depletion. From the work that you did, are you  
3 able to identify how much of this depletion  
4 occurs at the Arkansas River or to the Little  
5 Arkansas River?

6 **A. I made an estimate of about half and half**  
7 **because the wells just run on both sides of the**  
8 **well -- the rivers run on both sides of the well**  
9 **field. I didn't actually go into the simulation**  
10 **and break that out, so I was just estimating**  
11 **half and half.**

12 Q. Okay. So if we turn to figure 5, that's where  
13 you have taken the 50 percent and allocated it  
14 to the Little Arkansas?

15 **A. That's exactly right.**

16 Q. Earlier you talked about a cone of depression,  
17 can you explain to me what the cone of  
18 depression is?

19 **A. Yes. That's the lowering of water levels that**  
20 **occurs around a well. So if you've ever -- if**  
21 **you've ever gotten a milkshake and -- in a cup**  
22 **with a straw and you take the lid off and you --**  
23 **you drink some of the milkshake you'll actually**  
24 **see a little cone that goes around the straw.**  
25 **That concept applies to a well in an aquifer,**

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1 and so the cone of depression is the drawdown  
 2 that occurs in the water level. And -- and I  
 3 actually illustrate that on figure 6 of my  
 4 report for each of the scenarios, and on figure  
 5 7 the cumulative drawdown from all of those. So  
 6 those contours are the cone of depression.  
 7 Q. Okay. And I believe that you said in the  
 8 context of a cone of depression that the  
 9 pumping, or the maroon on your figure --  
 10 **A. Yeah.**  
 11 Q. -- stops at year six, but then the depletion  
 12 continues, the stream depletion continues?  
 13 **A. Yeah, and I was talking about figure 1 --**  
 14 Q. Okay.  
 15 **A. -- when I said at year six because on figure 1,**  
 16 **the pumping stops at year six because that's how**  
 17 **the credit pumping came out in the City's**  
 18 **1 percent drought scenario.**  
 19 Q. Okay. So when I look at figure 2, that pumping  
 20 stops -- or decreases, I guess, at year eight  
 21 and continues?  
 22 **A. Yeah. At year eight -- it's 40,000 acre-feet**  
 23 **per year up till year eight, and then after**  
 24 **that, there are a couple of wetter periods, and**  
 25 **that was just -- those were two more years that**

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1 were represented in the City's modeling; and I  
 2 just left that unaltered, so that's the pumping  
 3 that was represented for that.  
 4 Q. Did you look at how long -- if the pumping  
 5 stopped after year eight or year ten, did you do  
 6 any analysis of how long the pumping con -- or  
 7 the depletion continues?  
 8 **A. I didn't. I only ran it out to ten years. And**  
 9 **so, like, on figure 2, you can see there's**  
 10 **depletion that carries on beyond the eight**  
 11 **years, and it starts to decrease because the**  
 12 **blue band starts to get a little more narrow,**  
 13 **but I did not look further than that.**  
 14 Q. So we don't know following a 1 percent drought  
 15 scenario if the City were to resume back to its  
 16 normal patterns, we don't know how long  
 17 depletion might continue post drought?  
 18 **A. I -- I didn't quantify that here so we don't**  
 19 **know. I anticipate it would be tens of years,**  
 20 **but I haven't actually quantified it.**  
 21 Q. And the continuing depletion after pumping has  
 22 ceased, does that only impact streams, or is  
 23 there also continued depletion within the  
 24 aquifer after pumping has ceased?  
 25 **A. It continues on the streams. The depletion**

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1 decreases in the aquifer because water levels  
 2 are rising in the aquifer, but that's at the  
 3 expense of flow from the river. So when you  
 4 turn off the wells right at the area of the  
 5 wells, water levels begin to recover  
 6 immediately, and they will continue to recover  
 7 until you turn the wells back on. But the river  
 8 will continue to deplete to fill in that cone.  
 9 Q. Can you find figure 11 of the City's proposal,  
 10 which I believe to be Exhibit 1?  
 11 **A. I've got it.**  
 12 **PRESIDING OFFICER:** I'm sorry, where  
 13 are you?  
 14 **MS. WENDLING:** Figure 11 of the  
 15 proposal.  
 16 **PRESIDING OFFICER:** 11, thank you.  
 17 **BY MS. WENDLING:**  
 18 Q. This figure represents the average aquifer  
 19 conditions by index cell at the modified minimum  
 20 index levels; is that correct?  
 21 **A. Yes.**  
 22 Q. And there was some discussion earlier and I got  
 23 confused, are these figures representing the  
 24 average for the index cell or the data at the  
 25 index well?

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1 **A. I -- I interpret these to represent the**  
 2 **saturated thickness that is in the model layers,**  
 3 **so it's a full saturated thickness, I believe in**  
 4 **all three model layers. There is additional**  
 5 **detail that could be added to that. The -- the**  
 6 **model does have the framework for consideration**  
 7 **of clay and silt, sand and gravel, and the way**  
 8 **that the model was developed, it -- those**  
 9 **factors are taken into consideration when**  
 10 **hydraulic properties are set up in the model. I**  
 11 **interpret these thicknesses on figure 11 to**  
 12 **represent the full saturated thickness.**  
 13 **In areas where you have clays, there's**  
 14 **thickness there, but there's -- clay is more of**  
 15 **an aquitard. So this information is useful. On**  
 16 **this figure, it illustrates saturated thickness.**  
 17 **It doesn't describe the detail of regions within**  
 18 **that thickness where the aquifer would not be as**  
 19 **productive, areas where there may be clay versus**  
 20 **areas where there's sand.**  
 21 Q. Okay. Can you turn to, I think it's Exhibit 46,  
 22 and I believe you started to talk about this  
 23 yesterday with regard to the layers; is that  
 24 correct?  
 25 **A. Yes.**

1 Q. And there were charts matched with green and red  
2 and yellow?

3 **A. Yeah, it's actually at figure -- figure 17 is**  
4 **where that discussion begins.**

5 Q. Okay. Page 27?

6 **A. Yes.**

7 Q. So can you help me understand how the yellow,  
8 orange, and green correlate to what's shown on  
9 figure 11?

10 **A. Yeah, let me -- let me describe figure 17 first**  
11 **in Exhibit 46. Figure 17 illustrates all of the**  
12 **lithologic data that was used by the USGS as**  
13 **part of development of this -- of this model.**  
14 **So information was taken from all of those well**  
15 **logs, and it was categorized into four**  
16 **categories; a 1 was for clay, a 2 was for silt,**  
17 **a 3 was for sand, and a 4 was for gravel.**

18 **Now, if you turn from figure 17 to figure**  
19 **18 on page 28, you'll see a map that shows a lot**  
20 **of green tones and yellow tones and orange**  
21 **tones. The green tones represent areas where**  
22 **there's clay. And this particular figure 18 is**  
23 **model layer 1. And there's a little legend on**  
24 **the bottom that says composite lithology, so the**  
25 **green is -- goes from 1 to 1.5 and 1.6 to 2.**

1 **areas are clays, the orange and reddish areas**  
2 **are sands and gravels. There's a lot of**  
3 **variability that's taken into account in the**  
4 **model, and that variability actually is applied**  
5 **to hydraulic properties that are represented in**  
6 **the model.**

7 **So figure 11 in the proposal talks about**  
8 **saturated thickness that's remaining, and that's**  
9 **a saturated thickness that includes model layers**  
10 **1, 2, and 3, a full saturated thickness. That**  
11 **thickness does not indicate what portion of that**  
12 **thickness is a clay or is a green area that's**  
13 **depicted here. So that is -- that's some detail**  
14 **about the saturated thickness that's not**  
15 **reflected on figure 11 --**

16 Q. Okay.

17 **A. -- of the proposal.**

18 Q. And I believe you said so with model layer 1, 2,  
19 and 3, that's as you go deeper within the  
20 aquifer?

21 **A. Yes.**

22 Q. Okay. And so if I see less green on figure 20  
23 for model layer 3, I can assume there's less  
24 clay the deeper I go?

25 **A. Yes.**

1 **Well, the 1 means clay. So when it's going from**  
2 **1 to 1.5, that means it's averaging between 1 as**  
3 **a clay, 2 as a silt. So there's an averaging**  
4 **happening there between clay and silt in a green**  
5 **area.**

6 **When you go further down on that legend and**  
7 **go from, for example, you know, 2.1 to 2.5,**  
8 **which is the light green, and 2.6 to 3.0, which**  
9 **is an orange, you're talking about**  
10 **classifications 2 and 3, but all that means is**  
11 **that 2 is a silt and 3 is a sand. So the color**  
12 **tone is an averaging of silt and sand.**

13 **So the way that the USGS put this together**  
14 **was in model layer 1, they looked at lithologic**  
15 **logs and took the thickness and came up with a**  
16 **composite lithology that's an averaging between**  
17 **these different sizes of grains in the**  
18 **sediments, okay? So they did that for all the**  
19 **layers.**

20 **If you look at figure 19, the same thing is**  
21 **done, but that's for model layer 2, that's the**  
22 **deep zone. And one thing that you'll see in**  
23 **figure 19 is that there were areas where there's**  
24 **green intermixed with orange, and in some cases**  
25 **even a darker orange. Well, the dark green**

1 Q. Does that necessarily translate to more  
2 available water?

3 **A. In -- in areas where there's clay, it may not**  
4 **directly translate to more available water. In**  
5 **areas where there's sand, it would.**

6 Q. Okay.

7 **A. So the clay would impede some flow, yeah, to the**  
8 **well.**

9 Q. Okay. And within these three layers of the  
10 aquifer, are they barriers between the three  
11 layers, or does water freely move between the  
12 three layers?

13 **A. In this report, they describe a layer of finer**  
14 **grain material between layers 1 and 2, so going**  
15 **through this process of evaluating well --**  
16 **wellbore lithology, that helped them decide**  
17 **where they would put -- where they would put the**  
18 **bottom of layer 1 and start the top of layer 2.**  
19 **So there's some -- the term is actually called**  
20 **anisotropy in terms of permeability, which just**  
21 **means that in this case water can move more**  
22 **freely horizontally than vertically between**  
23 **layers, but the model accounts for that.**

24 **So there's -- so the way that water moves**  
25 **vertically, it happens generally slower than it**

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1 does horizontally, okay, and that's reflected in  
 2 the model. And that relates to you look at the  
 3 lithologic data from each well and you see where  
 4 fine grain sediments are versus coarse grain  
 5 sediments, and that helps you make decisions on  
 6 model layering, and that's part of what was done  
 7 here. Does that make sense?  
 8 Q. Yes. I had not realized water moved faster  
 9 horizontally than vertically.  
 10 A. In this particular area it does. There's some  
 11 areas where that does -- that's not the case.  
 12 Q. Okay.  
 13 A. But that is a concept that's built into this  
 14 model here.  
 15 Q. Okay. And does this -- do these figures in  
 16 Exhibit 46 tell me the depth of the layers, of  
 17 layer 1, 2, and 3?  
 18 A. It doesn't but there are some figures before  
 19 that, if you go to figure 14 on page 23. Figure  
 20 14 on page 23 tells you the thickness for model  
 21 layer 1, and you can see it's variable. So you  
 22 can't quite see the depth here, and I don't  
 23 think there's a figure in the -- in this report  
 24 that illustrates the depth, you would have to do  
 25 some work to do it. You would take the land

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1 surface and then you would subtract the  
 2 thickness -- I'd actually have to check and see  
 3 if it's from the land surface or the top of the  
 4 aquifer, but you would have to do some math  
 5 processing, some spatial processing in order to  
 6 get depths. But with these thicknesses you can  
 7 get an idea of the depth.  
 8 Figure 14 and figure 15 and figure 16  
 9 illustrate the thicknesses of each layer. But  
 10 those thicknesses -- I think those thicknesses  
 11 are probably more aligned with what's shown on  
 12 figure 11 in the proposal, the full thickness,  
 13 and figures, as I said earlier, figures 18, 19,  
 14 and 20 would indicate portions of the aquifer  
 15 that are permeable versus portions that are less  
 16 permeable where there are clays.  
 17 Q. Okay. So if I'm drilling a well and I want to  
 18 be in model layer 3, I can look at this figure  
 19 14 to try and help me understand how deep I need  
 20 to drill my well?  
 21 A. That gives you an idea. And what -- what I  
 22 would do is I would map out figure 17, 'cause  
 23 figure 17 shows you the data density, figure 17  
 24 shows you the wells that were actually used  
 25 for -- for doing this. So if you're in an area

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1 where there's not a lot of data density, that  
 2 increases the uncertainty of what you'll find  
 3 there. So if -- if you happen to be right in an  
 4 area where there's a well, I would actually go  
 5 get that log and take a look at that, and that  
 6 would give you an idea of the prospect for  
 7 deepening your well in that area.  
 8 Q. Okay. So if I'm looking -- sorry. If I'm  
 9 looking back at figure 11, at we'll say index  
 10 well 2, this is showing me the average for that  
 11 two-mile-by-two-mile area, the average depth  
 12 based on the average lithography in model layers  
 13 1, 2, and 3 from the USGS report; is that  
 14 correct?  
 15 A. Yes.  
 16 MR. OLEEN: Just a point of  
 17 clarification, Ms. Wendling, when you said  
 18 figure 11, you mean of the proposal now?  
 19 MS. WENDLING: Yes, sorry.  
 20 BY MS. WENDLING:  
 21 Q. And the dots on this represent the index well  
 22 location, so if I'm close to that index well  
 23 location, can I feel comfortable with the  
 24 numbers and does that give me the certainty  
 25 similar to how you would say for figure 17 in

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1 the USGS report?  
 2 A. What I would do is I would get the log that's  
 3 close to where you are and actually inspect that  
 4 log and see how deep it goes. Figure 17 is  
 5 showing all the logs, and I presume they've all  
 6 got different depths. So some of them may have  
 7 provided information only for layer 1, some of  
 8 them might have provided information for layers  
 9 1, 2, and 3.  
 10 But, you know, ideally, when you drill a  
 11 well, it's nice -- if there's a question, it's  
 12 nice to go out and drill an exploratory well  
 13 first and see what's there and then -- and then  
 14 proceed with your well, maybe drill a pilot hole  
 15 and see what's there. Some of these well logs  
 16 could serve as, if it's on site, right where you  
 17 want to put your well, it's something that could  
 18 have utility to help you understand the prospect  
 19 of going deeper.  
 20 But as I said, some of the wells that are  
 21 shown on this map that shows all the wells on  
 22 figure 17 of the USGS report, they may not have  
 23 gone the full depth. So you'd want to look at  
 24 how many went the full depth because they  
 25 interpolated that information to -- to create a

1 continuum.

2 **So -- so those are -- those are some**  
3 **details of what's in the model and how**  
4 **lithologic logs were used to understand what's**  
5 **there. And -- and what it means is that this**  
6 **saturated thickness on figure 11, although**  
7 **it's -- it's reporting a thickness, some of that**  
8 **thickness may not be very prospective for**  
9 **producing water if you deepen a well, or -- or**  
10 **shallower portions of it where there's clay.**

11 Q. Okay. And in the City's well field, there's  
12 numerous wells, and if they were to reallocate  
13 pumping from one index cell to another index  
14 cell, still staying within the amount reflected  
15 on proposal table 2-3 and 2-5, would that alter  
16 these numbers on proposal figure 11?

17 **A. If the pumping were distributed differently than**  
18 **what was simulated?**

19 Q. Yes.

20 **A. Yes, that would -- to some degree. Also in**  
21 **my -- in my work, I've shown a cone of**  
22 **depression; there would -- there would be some**  
23 **shifting on where the greatest amount of**  
24 **drawdown occurs. So depending on where the**  
25 **pumping is, the deepest part of the cone of**

1 Q. Okay. Did that data include the well log or  
2 lithographic data that you were referring to  
3 with the modeled layers in the USGS report?  
4 **A. I believe it includes lithologic data. I'm sort**  
5 **of forgetting right now if it does or not. But**  
6 **when I did my analysis, I considered the static**  
7 **water level in the well and the depth of the**  
8 **well. I did not evaluate the lithology.**

9 Q. Okay. So a well that is a shallower well, not  
10 going all the way to bedrock, you looked at just  
11 that -- is that what you mean by well column?

12 **A. Yes.**

13 Q. Okay.

14 **A. By well water column, I mean a static water**  
15 **level in the well and then the very bottom of**  
16 **the well. And, actually, not every single well**  
17 **had a static water level, so I made an estimate**  
18 **of what it was. And I describe that in my**  
19 **report, how I did that.**

20 Q. And static water level is something that would  
21 change over time?

22 **A. It's something that fluctuates, yes.**

23 Q. So when you found that, I believe it's footnote  
24 6 on page 8, that most of the Intervenor's wells  
25 did not have depth to water, this was based off

1 depression could shift.

2 Q. Okay.

3 **A. Yeah.**

4 Q. And so for pumping, for recharge, if there's  
5 recharge in some index cells but not others, and  
6 by recharge I mean physically injecting water,  
7 could that -- as that shifts around the basin  
8 storage area, could these numbers also change?  
9 **A. Yes.**

10 Q. Could you turn to page 7 of your report? On  
11 this -- on page 7, do you discuss comparing  
12 information on local wells to drawdown figures?

13 **A. Yes, at the bottom of page 7.**

14 Q. Yes. Can you -- the well information you looked  
15 at in this section of your report, that is the  
16 KGS -- KGS data?

17 **A. Could you repeat that?**

18 Q. Is the information on local wells that you --  
19 well, strike all that. What information on  
20 local wells did you consider?

21 **A. I considered information that I downloaded from**  
22 **a water well completion records database that's**  
23 **available from the Kansas Geological Survey, and**  
24 **I considered data that was provided by your**  
25 **office.**

1 of the limited information you had from either  
2 me or Kansas Geological Survey?

3 **A. Yes.**

4 Q. And do you have any idea if this information is  
5 regarding primarily irrigation and stock  
6 watering wells or if it was domestic well  
7 information?

8 **A. It was primarily domestic.**

9 Q. From KGS?

10 **A. From KGS.**

11 Q. Yes. I know what I provided you.

12 **A. Yeah. From KGS, yes.**

13 Q. But as you had said earlier, that's the domestic  
14 wells most likely -- more recent to 1975 when it  
15 became a requirement to submit?

16 **A. Wells that were drilled post 1975.**

17 Q. I know you've been here on and off during these  
18 hearings, but there has been commentary about  
19 after the modeled 1 percent drought the aquifer  
20 is still 80 percent full. Have you heard that  
21 at all throughout?

22 **A. Yes, and that's kind of generally reflected on**  
23 **figure 11, which -- which I think actually is**  
24 **the water level that's modeled after the drought**  
25 **plus the contingency. And there are numbers**

1 there that range from, you know, in the 60s to  
 2 the 80s, some areas are a little over 90; it's  
 3 something that just looking at there is probably  
 4 in the ballpark of around 80 percent.  
 5 Q. Okay. Is aquifer fullness the distance between  
 6 the static water level and bedrock, or is  
 7 aquifer fullness something other than that?  
 8 A. I think fullness here is referred to as -- oh,  
 9 gosh, I can't remember what year -- a particular  
 10 year when water levels were at a certain level  
 11 has kind of been designated as the full  
 12 condition. I just can't remember when that is  
 13 right now.  
 14 Q. Does that sound like the predevelopment levels?  
 15 A. Yes.  
 16 Q. Okay.  
 17 A. Yeah, predevelopment level and I consider  
 18 that -- I think that represents the  
 19 predevelopment water level in comparison to the  
 20 full thickness, which would be down to the  
 21 bedrock.  
 22 Q. And does the 80 percent full figure contemplate  
 23 the, what I like to call the orange, yellow, and  
 24 green colors on the USGS report, like the clay  
 25 and silt and sand?

1 of it is not as prospective. So thickness is  
 2 important but also considering the prospect for  
 3 sediments that produce water is -- is also  
 4 important.  
 5 Q. So the capacity to produce water would help me  
 6 as an individual well owner determine whether or  
 7 not there's available water for me?  
 8 A. It would.  
 9 Q. In reviewing some of the many reports in this,  
 10 I've seen the term storage coefficient. Can you  
 11 tell me what storage coefficient is and what, if  
 12 you know, the coefficient used in the model?  
 13 A. Storage coefficient represents the volume of  
 14 water released per volume of water level change  
 15 in a unit control volume, okay? That's --  
 16 that's actually the formal definition of a  
 17 storage coefficient. The practical definition  
 18 that would make sense to most everybody is you  
 19 could imagine that you have a bucket of sand,  
 20 and that sand, if it's completely dry, the  
 21 volume where that sand is, it's filled with sand  
 22 but it's also filled with pore spaces between  
 23 the sand granules; and those pore spaces, if  
 24 it's completely dry, there's just going to be  
 25 air space in there.

1 A. I -- I do not believe it does.  
 2 Q. When evaluating an aquifer, is fullness a  
 3 typical way of measuring an aquifer's health?  
 4 A. I've seen that done before or postulated that  
 5 way, yes.  
 6 Q. Is there another figure that you use in your  
 7 work?  
 8 A. I'd say the capacity to produce the water. You  
 9 know, there are -- in parts of New Mexico, I do  
 10 some work - well, parts of Kansas too - but in  
 11 some parts of New Mexico, the Ogallala Aquifer  
 12 reaches just -- the fringe of the aquifer  
 13 reaches parts of New Mexico, and I've done some  
 14 work in an area there where the Ogallala is  
 15 reducing in saturated thickness, as it is in  
 16 many areas, and I examined the prospect of  
 17 whether or not you can deepen your well, and it  
 18 sits atop a bedrock that is not very prospective  
 19 for producing water. So thickness is important.  
 20 There's another basin that I've looked at  
 21 where there is a basin fill type of aquifer that  
 22 sits atop bedrock, but about the lower 30 feet  
 23 of that basin fill aquifer has gotten cemented  
 24 just because of some geologic processes and  
 25 water migration processes and the lower portion

1 When you pour water into this sand bucket,  
 2 those pore spaces fill with water, and so the  
 3 water that's stored in that bucket, if there  
 4 were no sand, it'd be 100 percent storage. If  
 5 you have a sand that's all the same size,  
 6 roughly sediments sand, then it may be 25  
 7 percent or so of air space; but you pour the  
 8 water in there, then 25 percent of that volume  
 9 is filled up with water. Storage in the aquifer  
 10 is analogous to the water that's stored in those  
 11 pore spaces.  
 12 And it can get more complex because when  
 13 you pump, actually, water out of it, not all of  
 14 it drains, some of it's retained because of  
 15 surface tension, so storage that's in the model,  
 16 part of the calibration is to come up with  
 17 storage values and hydraulic conductivity values  
 18 that allow you to calibrate your model and show  
 19 water levels that change through time to see  
 20 whether or not your model can represent actual  
 21 water levels that have changed through time.  
 22 And part of that is storage drainage. And in  
 23 some cases you don't even drain it, there are  
 24 different types of storage.  
 25 But that stored water is a component that

1 you consider, and it's something that affects  
2 the way your cone of depression expands, along  
3 with the properties in the aquifer that allow it  
4 to flow. Now, I don't remember right off the  
5 top of my head the storage quantities that are  
6 used in the USGS model, but developing those  
7 numbers was part of the calibration process.

8 Q. Okay. So if I'm an individual wanting to put in  
9 a well that will yield water below the proposed  
10 minimum index level, I would need to know the  
11 storage coefficient at those aquifer levels?

12 **A. You wouldn't necessarily need to know the  
13 storage coefficient. You could drill a well and  
14 run a test and figure out what it is. But if --  
15 you know, you could do -- you could do some  
16 exploratory drilling and testing, you could --  
17 you could drill a well down to a particular  
18 depth and you could pump it, you could monitor  
19 how quickly the water level declines and how  
20 quickly it recovers, and that would provide you  
21 with information to understand the prospect of  
22 deepening your well to that zone, to that depth.**

23 Q. And are drilling all these exploratory wells,  
24 you know, if you have 100 people living in an  
25 area, is it easier for them to each go do an

1 believe? Yes.

2 **A. Yes.**

3 Q. Is drilling --

4 **MR. OLEEN:** Sorry to interrupt, and  
5 I'll quit doing this, as long as for the  
6 record anytime the witness uses impairment,  
7 right, we're talking about the previously  
8 agreed to definition that GMD2 counsel  
9 provided to him and now I assume you're  
10 wanting him to also use that definition?

11 **BY MS. WENDLING:**

12 Q. I will rephrase my question. So the - now I'm  
13 getting myself - potential impact to domestic  
14 wells on figure 7 --

15 **A. Yes.**

16 Q. -- is that impact remedied by drilling a new  
17 well?

18 **A. It could -- it could be if you drill the well  
19 into an area where the sediments are prospective  
20 for producing the amount of water that you need.**

21 Q. Okay. And that goes back to the bucket of sand  
22 concept?

23 **A. Back to the bucket of sand concept and to the  
24 grain size about whether or not you're deepening  
25 your well into some sediments that are producing**

1 exploratory well rather than try and model the  
2 detailed storage coefficient and the properties  
3 of that specific location?

4 **A. I think the modeling could provide some insight  
5 to areas where it could potentially occur, and  
6 there may be some wells that exist there already  
7 that could be tested. And if there aren't, some  
8 exploratory drilling could be done.**

9 Q. All right. Going back to water levels and  
10 MODFLOW, do you know where the water levels used  
11 in MODFLOW come from in terms of what date?

12 **A. You mean in the -- in the 1 percent drought  
13 scenario or --**

14 Q. Yes.

15 **A. There's a starting head condition that's  
16 described. I need to kind of look back, I think  
17 it might be 1998.**

18 Q. If it is 1998, do you know at what point in the  
19 year the measurements are taken?

20 **A. I seem to recall reading or hearing discussion  
21 about winter water levels, but I'm not  
22 100 percent sure.**

23 Q. Okay. Do you believe -- we talked about the  
24 potential impairment to domestic wells and how  
25 that's reflected on figure 7 of your report, I

1 **enough water for your need or whether or not you  
2 may hit sediments where you don't get the amount  
3 of water that you need.**

4 Q. Okay.

5 **A. Such as a clay.**

6 Q. Okay. And if the analysis you did -- the  
7 analysis you did to get to figure 7 is based on  
8 the 1998 starting head conditions used in the  
9 drought simulation, if -- did you look at other  
10 potential starting head conditions other than  
11 1998?

12 **A. I did in some sensitivity analyses, and I did  
13 find that it does make a difference. I think  
14 depending on what your starting head is, I think  
15 it kind of translated roughly to if your  
16 starting head was -- was -- I think I looked at  
17 a predevelopment case actually, and I don't  
18 remember how much higher it was, but I think it  
19 kind of generally translated to the amount that  
20 the starting head was higher by, the resulting  
21 head was comparably higher, not exactly but  
22 comparably higher by about the same amount.**

23 Q. So with the relatively full conditions we have  
24 today, the impact of the sample wells on figure  
25 7 could be lessened due to the higher well --

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1 higher aquifer levels we have today?  
 2 **A. It could be lessened --**  
 3 Q. As compared to 1998?  
 4 **A. It could be lessened based on that type of**  
 5 **analysis.**  
 6 Q. Okay. Yesterday when you were talking about,  
 7 going back in time, your Arizona research  
 8 assistant role --  
 9 **A. Yeah.**  
 10 Q. -- you made a comment, and I didn't catch all of  
 11 it, about dissecting MOD -- the MODFLOW model  
 12 into different shapes as opposed to a grid.  
 13 **A. Yeah.**  
 14 Q. Why did you -- what benefit did you find to  
 15 different shapes?  
 16 **A. The model has a grid that represents aquifer**  
 17 **space, and the way that -- there are newer**  
 18 **versions of MODFLOW now, but back then the way**  
 19 **that MODFLOW worked, your grid had to be**  
 20 **constructed out of rectangular cells. So if you**  
 21 **wanted to have more detail in a particular area**  
 22 **in your grid, part of that detail would have to**  
 23 **span the entire area of your grid. There are**  
 24 **grids that are more sophisticated where you can**  
 25 **have, instead of a rectangular grid, you can**

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1 **have a mesh, and you can go to specific areas**  
 2 **and you make your cells smaller in your mesh,**  
 3 **just at specific areas where you're interested**  
 4 **in more spatial detail.**  
 5 **So some of the work that I did was I found**  
 6 **a way to take MODFLOW in the form that it was in**  
 7 **and to change the grid so that you could add**  
 8 **more detail to specific areas. And that**  
 9 **translates -- that translates to being able to**  
 10 **run your model faster, which translates to a lot**  
 11 **of time that you don't need to spend waiting for**  
 12 **the model to run and you can develop your model**  
 13 **more quickly.**  
 14 Q. All right.  
 15 **A. So it was having to do with the shape of the**  
 16 **grid cells to optimize its use.**  
 17 Q. Is that something that's possible with the -- to  
 18 do to the USGS model you reviewed?  
 19 **A. Yes, but that would take some -- some additional**  
 20 **work and some recalibration. There are versions**  
 21 **of MODFLOW now where you can come in and adjust**  
 22 **the grid. You know, actually these days, when**  
 23 **we develop models these days, we'll actually**  
 24 **develop two or three versions in parallel and**  
 25 **they'll have different grids. And so something**

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1 **like that could be done here, but I'm not**  
 2 **familiar with any effort that's been done with**  
 3 **that.**  
 4 Q. And why do, these days, do you use multiple  
 5 shapes?  
 6 **A. Because it's a more comprehensive approach so**  
 7 **you can get a feel for how your grid actually**  
 8 **affects your results. And -- and in the process**  
 9 **of doing that, you also find that whatever**  
 10 **problem you're working on may be better suited**  
 11 **for a particular type of grid.**  
 12 Q. Okay.  
 13 **A. So when you're developing the model, that takes**  
 14 **some time, but it actually doesn't take that**  
 15 **much more time to develop another version in**  
 16 **parallel that has a different type of grid.**  
 17 Q. Okay. You also mentioned Groundwater Vistas, is  
 18 that something that you work with?  
 19 **A. Very rarely. We have some of our own techniques**  
 20 **that we use. We do use it on occasion because**  
 21 **models that we may look at may have been**  
 22 **developed by someone who used that, so we have**  
 23 **it just for compatibility -- compatibility with**  
 24 **communication with other people who work on**  
 25 **models.**

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1 Q. Okay. Going back to figure 3 of your expert  
 2 report, I believe, which shows us under, I  
 3 believe, the status quo the amount of credit  
 4 pumping the City -- or the amount of credits the  
 5 City would be able to recover based on the  
 6 current minimum index level? Did I say that  
 7 correctly?  
 8 **A. Yes, assuming that the 40,000 acre-feet per year**  
 9 **is prioritized in diversion.**  
 10 Q. Based on figure 3 and your review of this  
 11 project, do you view the current minimum index  
 12 level as essentially a cap on the recovery of  
 13 credits?  
 14 **A. That's how I treated it here.**  
 15 Q. You briefly mentioned arsenic in clay as it  
 16 relates to water quality, and that is not  
 17 something that you specifically looked at within  
 18 the scope of your review; is that correct?  
 19 **A. I didn't analyze it. I considered -- I**  
 20 **considered chloride. If I -- in order to**  
 21 **consider arsenic, I would have needed to add in**  
 22 **some other parameters to represent -- arsenic**  
 23 **behaves differently than chloride when it**  
 24 **migrates. I received a question about that**  
 25 **earlier today, I didn't -- there are absorption**



1 factors that are related to it because it --  
2 arsenic will essentially stick to sediments, and  
3 chloride doesn't tend to, it tends to move with  
4 the water. I did not consider that sort of  
5 thing.  
6 Q. Have you done other drought planning analysis?  
7 I don't recall from your resume.  
8 A. I have.  
9 Q. And did you take any water quality concerns in  
10 any of that work?  
11 A. Yes, I -- well, I recommended that further work  
12 be pursued and -- on particular projects that  
13 I've worked on, and in some cases it's been  
14 pursued, in some it hasn't. In a lot of the  
15 peer review work that I've done in drought,  
16 concerns were -- drought was considered and it  
17 was in situations where there's groundwater  
18 contamination. So that was explicitly accounted  
19 for. You know, because you asked about it in my  
20 resume, I started thinking about my resume and  
21 jobs, but I could have just said yes. Sorry.  
22 Q. That's okay. It's a very long resume. So is  
23 your understanding of the proposed  
24 modifications, they limit the City to only  
25 pumping reflected on tables 2-3 and 2-5 of the

1 proposal?  
2 A. I didn't catch the first part of that question.  
3 Q. Do you understand this City's proposal seeking  
4 to only pump what's reflected on tables 2-3 and  
5 2-5 of the proposal?  
6 A. No, I think -- I think that table is -- I think  
7 it's one realization of multiple model scenarios  
8 that they looked at and there -- it could be  
9 variable depending on what their needs are.  
10 Q. And if the City wanted to, they could pump more  
11 under the proposal than what's reflected on 2-3  
12 and 2-5?  
13 A. I believe so.  
14 Q. And that the analysis in the City's proposal  
15 does not reflect what happens if the aquifer is  
16 drawn down to the proposed minimum index level?  
17 A. That's correct. The analysis of the 1 percent  
18 drought scenario doesn't actually have water  
19 levels that reach down to the proposed minimum  
20 index level. The proposed index level is lower  
21 than that because of a contingency that's added.  
22 Q. In scenario A, which is figure 2 --  
23 A. Of my report?  
24 Q. Of your report, thank you. Which reflects  
25 pumping of the native -- of the City's native

1 water rights, correct?  
2 A. Yes.  
3 Q. Do you know if that draws the aquifer down to  
4 the 1998 levels?  
5 A. I believe it draws it down lower. I think the  
6 starting point was actually the 19 --  
7 Q. Oh.  
8 A. The starting point was this static 1998 level.  
9 Q. And you wouldn't know, then, if we started at  
10 the full condition, if this proposed pumping on  
11 figure 2 would draw it down from our current  
12 level to the '98 level?  
13 A. I don't. I suspect it would -- yeah, I don't  
14 know, I don't know the answer to that.  
15 MS. WENDLING: Thank you, I have no  
16 further questions.  
17 PRESIDING OFFICER: We're going to  
18 go off the record for a moment.  
19 (Discussion held off the record.)  
20 PRESIDING OFFICER: Let's go back on  
21 the record. It's 12:10, let's take a lunch  
22 break until 1:00. If we can be back  
23 earlier and start earlier, then we will.  
24 (Thereupon, a lunch recess was  
25 taken; whereupon the following was

1 had.)  
2 PRESIDING OFFICER: Okay. It's now  
3 5 till 1:00, and we are back on the record.  
4 And at this point, we're back to you,  
5 Mr. Adrian, right?  
6 MR. ADRIAN: That is my  
7 understanding.  
8 PRESIDING OFFICER: Yes.  
9  
10 REDIRECT EXAMINATION  
11 BY MR. ADRIAN:  
12 Q. Mr. Romero, Mr. McLeod had some discussion with  
13 you concerning the contingency that was put  
14 in -- or added into the City's plan, and your  
15 comment was, I think initially to quote, be  
16 careful with contingencies. Would you explain  
17 what you meant by that and what might be an  
18 alternative or possibly better approach to the  
19 contingency in the plan?  
20 A. What I -- what I meant by that was -- by to be  
21 careful with contingencies is you can take a  
22 approach in model development where - excuse  
23 me - where you could make a conservative  
24 judgment one way or another along your -- your  
25 approach. And if you do that at, you know,

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1 multiple steps along the way, you can get to an  
 2 end point and you could be so far out of the  
 3 ballpark because you've been making conservative  
 4 choices rather than making what seemed like the  
 5 most plausible and best choice within a range of  
 6 plausible values. That's what I meant by be  
 7 careful. So -- and I also described that, you  
 8 know, you could end up with a result, and if  
 9 you're making middle-of-the-road decisions along  
 10 the way, that decision may be -- your final  
 11 solution that comes out of the model can --  
 12 could be considered a best planning estimate.  
 13 And so that's what I meant by that.  
 14 And I think the second part of your  
 15 question about something that could be done that  
 16 might be better than what's in the plan?  
 17 Q. Yes, yes.  
 18 A. That's -- that's really difficult to quantify.  
 19 I think -- I think in terms of -- I think it can  
 20 be sensible to consider a plus or minus, but I'm  
 21 often in the position where I'm determining a  
 22 planning estimate that's based on an analysis,  
 23 and then someone may take that number and add  
 24 something that's conservative to that solution  
 25 from a planning perspective; and I think as long

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1 as everyone understands what's going on, that  
 2 can be okay.  
 3 Q. In addition, in response to Mr. McLeod's  
 4 questioning, and I put quotes around this, that  
 5 you concluded what Burns & McDonnell did in  
 6 their model work was appropriately done. Is  
 7 that a correct statement that you -- you made?  
 8 A. Yes, I think in terms of running the model and  
 9 doing the analysis, I think there's -- I think  
 10 there's some comprehensive work there that's  
 11 done, and I think -- I think it's appropriate,  
 12 yes.  
 13 Q. And I added on my notes, and it's my words, to  
 14 the extent that they did it. Would that be a  
 15 fair statement?  
 16 A. To the extent that they -- that they did it?  
 17 Q. They did not do the further analysis that you  
 18 did?  
 19 A. Oh, they -- they did not include the analysis  
 20 that I included. So I think it is important to  
 21 consider different levels of detail.  
 22 Q. Then in -- in figure 3 on your report, which was  
 23 the available -- availability of water in a  
 24 drawdown, Mr. McLeod focused on the figure of  
 25 14,900 feet, and would you explain again what

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1 that means?  
 2 A. That 14,900 acre-feet is essentially water that  
 3 remains above the current minimum index level  
 4 after diverting -- after the City diverts 40,000  
 5 acre-feet per year for eight years.  
 6 Q. And at what level did that start? What -- the  
 7 withdrawal of the 40,000 started at what -- my  
 8 notes indicate it was 1998 was the low level?  
 9 A. The initial level was 1998, yes.  
 10 Q. At the low level, was it not?  
 11 A. It's lower than predevelopment.  
 12 Q. And if I told you that the level is higher now,  
 13 it would be -- that figure would be larger,  
 14 would it not?  
 15 A. If you -- if the aquifer is at a higher level  
 16 and you start at that point, then I anticipate  
 17 more water than the 14,900 that I described on  
 18 figure 3 could be produced, under the same  
 19 scenario.  
 20 Q. And Mr. McLeod talked about Mr. Letourneau's  
 21 account of minimum streamflow -- or minimum  
 22 desirable streamflow as sort of real-time  
 23 administration, which I took it to be as when it  
 24 happens, we went out and looked at it to see  
 25 what we could do. My assumption would be that

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1 it would be better to prevent it in the first  
 2 place or minimize it in the first place. Is  
 3 that what you were talking about?  
 4 A. Yes, I was talking about if you can minimize  
 5 that occurrence beforehand with some technical  
 6 analysis that helps you foresee potential  
 7 impacts, there may be some planning that can be  
 8 done beforehand.  
 9 Q. And part of that planning, is it not, is knowing  
 10 what could happen under various circumstances?  
 11 A. Yes.  
 12 Q. And that's what you were attempting to provide  
 13 to the hearing officer and us?  
 14 A. That's correct.  
 15 Q. In other words, more information is better than  
 16 less?  
 17 A. Yes. In terms of decision making.  
 18 Q. You also talked about one of the possibilities  
 19 in the well field was to establish a buffer  
 20 around it, I was wondering if you could expand  
 21 on that description.  
 22 A. Ah. You can have a buffer around a single well  
 23 or a single point on a map that represents a  
 24 well, which, like, for example, on figure 7 of  
 25 my report, which is -- the red circles on that

1 map are buffers around -- 660-foot buffers  
2 around City wells. I was describing that rather  
3 than having a buffer around a single well, you  
4 could have a buffer that goes around the  
5 perimeter of the well field. And that would be  
6 something -- that'd be a possible way to  
7 consider -- probably a starting place for a  
8 consideration of maybe having some sort of  
9 protective condition, that you would consider  
10 any wells that are within the well field.  
11 Q. Do you anticipate, and I realize we're  
12 speculating at this point, but would you  
13 anticipate some rules with regard to as the  
14 water level reduced to a certain level, here's  
15 what action would be required to take?  
16 A. That seems like -- excuse me. That also seems  
17 like a possible place to be thinking about  
18 potential conditions.  
19 Q. Is that -- I mean, later on in your testimony or  
20 I think in response to questions, you talked  
21 about a replacement plan that you've seen in  
22 other circumstances. Is that -- would that be  
23 considered a part or an element in the buffer  
24 around the well field?  
25 A. It could be in terms of a buffer being a spatial

1 step, so it looked like they were right on the  
2 cusp of doing so.  
3 So to me that means that they wanted to  
4 carry the work further. It's very common for  
5 people who do science to always want to carry  
6 the work further. But when you label the work  
7 as preliminary, it makes me think you were in an  
8 earlier stage than you wanted to be. More so  
9 than even when you complete a project to a  
10 certain point. So I think what that generally  
11 means is that there are some conclusions that  
12 can be drawn from it and -- but I would -- I  
13 would just be cautious about trying to read too  
14 much into the results in some cases.  
15 MR. ADRIAN: I think I have no other  
16 questions.  
17 PRESIDING OFFICER: Okay.  
18 Mr. McLeod.  
19  
20 RE-CROSS EXAMINATION  
21 BY MR. MCLEOD:  
22 Q. I'm going to try to be short and efficient, I've  
23 only got one line of questioning. Mr. Romero,  
24 can you hear me all right without the  
25 microphone?

1 component. It's -- it's -- the concept is a  
2 remedy for a well that may lose its ability to  
3 produce water, to replace that water.  
4 Q. In other words, some preventative or remedial  
5 methods would be --  
6 A. Yes.  
7 Q. Okay.  
8 A. Yes.  
9 Q. When you were asked about the -- and responded  
10 about -- to questions about the USGS report, you  
11 emphasized that the first word in the title of  
12 that report is preliminary?  
13 A. Yes.  
14 Q. What does that mean to us?  
15 A. That means that -- well, it means to me that the  
16 USGS was still working on that, I think wanted  
17 to take it to a further place in terms of  
18 completion, but must have just reached a point  
19 where it got produced into a preliminary report.  
20 So -- and, actually, if you read through the  
21 report, they talk about some of the next steps  
22 that they want to take which are fundamental  
23 toward taking next steps, you know, making some  
24 adjustments to the actual flow model, which they  
25 never did. That would be a very obvious next

1 A. Yes.  
2 MR. ADRIAN: Oh.  
3 MR. MCLEOD: It's okay, Tom.  
4 BY MR. MCLEOD:  
5 Q. You had referred in your earlier testimony to  
6 the well data that you had as a statistical  
7 sample, and that data said -- it wasn't actually  
8 selected by any criteria you would use if you  
9 were selecting a statistical sample, was it?  
10 A. It was not, it was just available in the  
11 database.  
12 Q. You don't really know the total population of  
13 wells in the aquifer, do you?  
14 A. I do not.  
15 Q. And you don't really know that -- you didn't  
16 have the total population in that data set?  
17 A. I -- I do not know that. I did infer that  
18 people have been there since before 1975 and  
19 that wells would have been there before 1975,  
20 but that was an inference I made.  
21 Q. Wells do have limited useful lives, don't they?  
22 A. They do.  
23 Q. And so very possibly even wells drilled before  
24 1975 would have needed to be redrilled since and  
25 made the log of KGS, correct, for that reason?

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1 **A. It's possible. But I've also seen wells that**  
 2 **have been around for 50, 60 years and continued**  
 3 **on. So there is a service life associated with**  
 4 **wells but it's variable.**  
 5 Q. Also, Mr. Romero, I know you've met and, in  
 6 fact, been engaged in part by Ms. Wendling and  
 7 her office, so you're aware that there are a  
 8 number of people, some of whom are the  
 9 Intervenors, who have been very interested in  
 10 the subject matter of this hearing, correct?  
 11 **A. I'm aware.**  
 12 Q. Did you know that there's been a tremendous  
 13 amount of publicity as well about the subject  
 14 matter of the hearing?  
 15 **A. I suspect that there would be; I have not -- I**  
 16 **haven't read any newspapers locally.**  
 17 Q. Could be just as well. I would say as  
 18 exemplified by the presence and participation of  
 19 the Intervenors, would you consider it possible  
 20 that residents of the area and users of this  
 21 well field, having seen all of that publicity  
 22 and public notice, are here if they have any  
 23 concerns?  
 24 **A. I'm sorry, the question is?**  
 25 Q. Yes, given all the publicity and as exemplified

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1 by the presence and the participation of the  
 2 Intervenors, does it seem to you likely that any  
 3 well owners in the aquifer that are interested  
 4 in this hearing are here represented in some way  
 5 or another?  
 6 **MR. ADRIAN:** I'm going to object to  
 7 that -- those questions, I don't think he's  
 8 testified or in his report about that,  
 9 about publicity or the interest of the  
 10 local residents or anything else, and I  
 11 think it is an inappropriate question.  
 12 **PRESIDING OFFICER:** Okay. I'm  
 13 inclined to sustain that unless you can  
 14 explain the relevance.  
 15 **MR. MCLEOD:** Well, I mean, the  
 16 relevance of it is that the witness has  
 17 taken a data set as a statistical sample  
 18 and it consists of some KGS data that is --  
 19 that is post 1975 data and all of the  
 20 material that's been brought to him by the  
 21 Intervenors, right, and as exemplified by  
 22 the Intervenors being here and all of the  
 23 publicity, do we have any reason to think  
 24 that there's -- that there's anybody else  
 25 with a well that could be impacted by this

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1 hearing that isn't here, that isn't  
 2 represented, that's my question? It goes  
 3 to the validity of taking all that data as  
 4 a somehow statistical sample for an unknown  
 5 population of data.  
 6 **PRESIDING OFFICER:** Ms. Wendling.  
 7 **MS. WENDLING:** I would say that  
 8 there is no way this witness knows the  
 9 interest of the people in this area and  
 10 whether or not their lack of attendance  
 11 would say that they're not interested in  
 12 what's happening here.  
 13 **PRESIDING OFFICER:** Yeah, I'm  
 14 inclined to agree, I'll sustain the  
 15 objection.  
 16 **BY MR. MCLEOD:**  
 17 Q. In any event, Mr. Romero, I think we've  
 18 established you don't actually know the  
 19 population of wells in the aquifer, correct?  
 20 **A. That's correct.**  
 21 Q. And you don't know if this is really a  
 22 statistical sample, correct?  
 23 **A. Not in the mathematical way that a statistical**  
 24 **sample is taken.**  
 25 Q. And so statistically there is not a basis to

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1 imply the existence of additional impacted wells  
 2 from the six that you've identified in your  
 3 results, is there?  
 4 **A. On a purely mathematical statistical sense, no.**  
 5 **MR. MCLEOD:** Thank you.  
 6 **PRESIDING OFFICER:** Mr. Oleen.  
 7  
 8 **RE CROSS EXAMINATION**  
 9 **BY MR. OLEEN:**  
 10 Q. Just a couple questions. Mr. Romero, would you  
 11 please refer to your report on page 8, footnote  
 12 6.  
 13 **A. I'm there.**  
 14 Q. The sentence in that footnote that says, most of  
 15 the Intervenor wells did not have depth to  
 16 water. Just to clarify for my mind, does that  
 17 mean that the data on the wells that was  
 18 provided to you by the Intervenors, it did  
 19 not -- that data did not include how deep the  
 20 wells had been dug or how deep the wells were to  
 21 any water?  
 22 **A. It -- there was information as to how deep the**  
 23 **wells had been dug, the total depth was there,**  
 24 **but a depth to water was not there. You need**  
 25 **both numbers in order to create -- to calculate**

1 a water column. So what I did is I looked at a  
2 year 2016 of water level service -- surface that  
3 was created by the U.S. Geological Survey, which  
4 I interpret -- which I interpret to be pretty  
5 near a full condition, and I took that data and  
6 I cross-referenced it with the wells, and I used  
7 that as a static water level to create a water  
8 column.

9 Q. Thank you. And -- and when you say Intervenor  
10 wells there, you're referring to the data set of  
11 wells that were provided to you by the  
12 Intervenor, not wells that the Intervenor  
13 purport to have some sort of ownership interest  
14 in, right?

15 A. It relates to the data that was provided to me  
16 by the Intervenor, by Wendling Law.

17 Q. In a similar --

18 A. I'm sorry, what was the second part of your  
19 question, I didn't quite follow?

20 Q. Well, when you say Intervenor wells, that has  
21 nothing to do with ownership of particular wells  
22 by any of the Intervenor. You don't -- you  
23 don't know, or do you, whether the Intervenor  
24 own any of the wells that were in the data set  
25 you were provided with?

1 if these happened to be the party of Intervenor  
2 or partially the party of Intervenor; it's just  
3 not something I ever contemplated or discussed  
4 with her.

5 Q. Your study was trying to project into the future  
6 what might happen under certain things that are  
7 in the proposal, that's obvious, right?

8 A. Yeah, I -- I consider my analysis to be  
9 compatible with a 1 percent drought scenario,  
10 there were just some -- you know, I adjusted the  
11 City's pumping to be the full water right, and  
12 then I looked at how much water could be  
13 produced looking at the two index levels.  
14 It's -- it's -- I think of it as an example  
15 scenario with some utility for planning.

16 Q. And so because this was a -- or let me start  
17 over, strike that. In the course of your  
18 analysis, you didn't actually do any research or  
19 analysis regarding something akin to figure 7  
20 and what that area would have looked like in  
21 1993 and whether there were any wells that  
22 were -- that had lost their water column, as you  
23 said, in 1993, you didn't look into that, right?

24 A. I -- I did not look into that.

25 MR. OLEEN: No further questions,

1 A. Oh, I'd say I presumed that was the case, but I  
2 technically do not know.

3 Q. And so then on -- on figure 7 of your report  
4 where you have indicated certain domestic wells  
5 that according to your analysis will be impacted  
6 by the scenarios that you modeled, you can't say  
7 whether any of these black -- black circles that  
8 are domestic wells or squares that are domestic  
9 wells, you don't know whether any of those are  
10 owned by any of the named Intervenor or not, do  
11 you?

12 A. I never cross-referenced the list to see  
13 anything like that, I just -- the data was  
14 provided to me and -- and I used it. I -- I  
15 never contemplated the question you're asking.

16 Q. And you weren't given, to your recollection,  
17 information about any ownership that the  
18 Intervenor might have in any of the wells that  
19 were contemplated in your study?

20 A. You know -- oh, boy. It's just been awhile  
21 since I've looked at those documents, you know,  
22 there may be names that are in there. I  
23 just right now don't quite recall or even --  
24 once I got the wells, I started working with  
25 them. I never discussed with Ms. Wendling or --

1 thank you.

2 PRESIDING OFFICER: Ms. Wendling.

4 RE-CROSS EXAMINATION

5 BY MS. WENDLING:

6 Q. Mr. Romero, can I have you turn to GMD2's  
7 exhibit volume -- Volume Number I, Exhibit 16?

8 A. I'm there.

9 Q. Can you tell me what this document appears to  
10 be?

11 A. Responses to City of Wichita's first set of  
12 interrogatories to Intervenor.

13 Q. All right. Can you turn now to page 3?

14 A. I'm there.

15 Q. And on the top of that, do you see permit  
16 information?

17 A. I do. I see a table with two permit numbers.

18 Q. Okay. Does this at all seem familiar in  
19 relation to the information provided to you  
20 regarding the Intervenor well information?

21 A. It does. I -- I recall now I received a  
22 spreadsheet, and this actually looks like it  
23 might be part of that spreadsheet.

24 Q. Okay. Can you turn to page 11 of that?

25 A. I'm there.

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1 Q. And can you tell me the name on that  
 2 verification?  
 3 **A. Bill Carp.**  
 4 Q. And to your knowledge, is he an Intervenor?  
 5 **A. I suspect he may be. He was on the telephone**  
 6 **with me once when I was talking with you.**  
 7 Q. Okay.  
 8 **A. I presume so but technically I'm not entirely**  
 9 **sure.**  
 10 Q. Okay. Would it make sense that as an Intervenor  
 11 he would sign the interrogatory response for the  
 12 Intervenor?  
 13 **A. Yes.**  
 14 Q. Okay. Now, if you can keep turning, you'll see  
 15 another page 1.  
 16 **A. Oh, I do.**  
 17 Q. And if you go now to page 3 of that  
 18 interrogatory response, can you tell me what you  
 19 see towards the middle of that page?  
 20 **A. I see a listing of four domestic wells.**  
 21 Q. Okay. And if we flip to the end of this  
 22 particular response, do you see another  
 23 signature?  
 24 **A. I do.**  
 25 Q. And does this appear to be the signature of

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1 another Intervenor?  
 2 **A. It does, it's in a Intervenor response.**  
 3 Q. So if I told you the information -- the  
 4 Intervenor well information provided to you is  
 5 the information - or I think yours had a little  
 6 more detail - as provided in the interrogatory  
 7 responses, do you believe that to be accurate?  
 8 **A. Yes.**  
 9 Q. Do you have any reason to believe I provided you  
 10 data on anyone other than the Intervenor?  
 11 **A. I -- I don't.**  
 12 **MS. WENDLING:** Thank you, no further  
 13 questions.  
 14 **PRESIDING OFFICER:** Mr. Adrian?  
 15 **MR. ADRIAN:** I have no further  
 16 questions.  
 17 **PRESIDING OFFICER:** Okay.  
 18 Mr. Oleen?  
 19 **MR. OLEEN:** I do if Mr. McLeod does  
 20 not.  
 21 **PRESIDING OFFICER:** Okay,  
 22 Mr. McLeod?  
 23 **MR. MCLEOD:** I do not.  
 24 **PRESIDING OFFICER:** Okay.  
 25 //

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1 **RE CROSS EXAMINATION**  
 2 **BY MR. OLEEN:**  
 3 Q. Back to some interrogatories that you were  
 4 directed to look at, Mr. Romero, which was GMD2  
 5 Exhibit 16, I presume you still have it in front  
 6 of you?  
 7 **A. I do.**  
 8 Q. I don't remember exactly what pages we looked  
 9 at, but if you turn to -- first, Exhibit -- I'm  
 10 sorry, excuse me, page 3, the first page 3.  
 11 **A. Let's see, the -- in Exhibit 16, you mean the**  
 12 **page 3 on the first document in there?**  
 13 Q. Yes. I believe that's the one that was  
 14 suggested to you was signed by Mr. Bill Carp,  
 15 who I think was suggested to you is one of the  
 16 Intervenor?  
 17 **A. I think was clarified for me that he's one of**  
 18 **the Intervenor.**  
 19 Q. So you see at the top where it says the  
 20 following individual water rights, I'm  
 21 paraphrasing somewhat, belong to me or land that  
 22 I lease and risk impairment from the proposed  
 23 modifications?  
 24 **A. I see that text.**  
 25 Q. And it gives two water -- water right permit

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1 numbers there in that box, right?  
 2 **A. Yes.**  
 3 Q. Only -- only one of those two water permit or  
 4 water rights is given an index cell number, I  
 5 don't know why that is, but do you see where it  
 6 says index cell 31?  
 7 **A. I do.**  
 8 Q. If you could turn to figure 7 in your report.  
 9 **A. Okay.**  
 10 Q. Is there any impacted well, as you claim could  
 11 occur, shown in index cell 31 of your figure 7?  
 12 **A. There isn't but give me one moment. I just want**  
 13 **to look at how I mapped locations for the wells,**  
 14 **if you give me just a minute. Okay. Actually,**  
 15 **on page -- on my report, which is, I believe,**  
 16 **Exhibit 68, on page 8 of my report, there is a**  
 17 **footnote number 6. Okay, so I think at the time**  
 18 **I was doing this, I may have thought they were**  
 19 **Intervenor wells because of the way that I wrote**  
 20 **footnote 6, but I think I had just forgotten**  
 21 **because it wasn't something that really mattered**  
 22 **in my analysis, but -- or at least didn't matter**  
 23 **with regard to conducting a technical analysis.**  
 24 **So what I describe on footnote 6 is that**  
 25 **for those wells, we cross-referenced water**

1 **rights numbers with water -- with the Water**  
 2 **Information Management and Analysis System, or**  
 3 **WIMAS, to determine well location. So one thing**  
 4 **I would point out, although that well does not**  
 5 **come out in index cell 31, I used locations that**  
 6 **were based on what was in the WIMAS database,**  
 7 **and oftentimes there's interpretations that are**  
 8 **made or you have wells down to -- maybe down to**  
 9 **a section or a half section or a quarter quarter**  
 10 **section that can affect the location of the**  
 11 **well. So I did the analysis with a level of**  
 12 **detail that was in the database for locations.**  
 13 **So that can affect whether or not it falls right**  
 14 **within an index cell or not. So I just wanted**  
 15 **to clarify that point.**  
 16 Q. Similar on the subsequent page 3, in GMD  
 17 Exhibit 15 (sic), which I believe Ms. Wendling  
 18 represented to you or clarified to you was an  
 19 interrogatory response provided by a purported  
 20 Intervenor whose name I don't recall, but if you  
 21 would just turn to that second page number 3  
 22 where there's another table that purports to  
 23 list domestic wells --  
 24 **A. Yes.**  
 25 Q. -- in a box. Do you see that?

1 thank you, sir.  
 2 **PRESIDING OFFICER:** Any other  
 3 questions? Ms. Wendling?  
 4 **MS. WENDLING:** No.  
 5 **PRESIDING OFFICER:** Okay. That  
 6 being the case, Mr. Romero, you're excused.  
 7 Thank you.  
 8 **A. Thank you.**  
 9 **MR. ADRIAN:** Ms. Owen, could we have  
 10 about five minutes to clean up so we can  
 11 move Mr. Rolfs in here and we're going to  
 12 call Mr. Pope?  
 13 **PRESIDING OFFICER:** Okay. A real  
 14 quick functional break.  
 15 (Thereupon, a recess was taken,  
 16 after which Mr. Leland Rolfs was  
 17 present in the hearing room.)  
 18 **PRESIDING OFFICER:** Okay. Now we're  
 19 back on the record.  
 20  
 21 DAVID L. POPE,  
 22 having been first duly sworn, was  
 23 examined and testified as follows:  
 24  
 25 **MR. ROLFS:** And for the record, I'm

1 **A. I do.**  
 2 Q. And it gives index cell number 30 as the  
 3 purported location of these various domestic  
 4 wells that this person supposedly owns or  
 5 leases. Is that a fair characterization?  
 6 **A. It -- that characterization sounds reasonable.**  
 7 Q. And, similarly, if we turn to figure 7 where you  
 8 have provided this graph that purports to show  
 9 certain wells that you think -- certain known  
 10 wells that you think potentially could be  
 11 impacted under the scenarios that you modeled,  
 12 there's similarly not any black square or circle  
 13 indicating any impacted well in index cell 30 of  
 14 your figure 7 graph, correct?  
 15 **A. That's correct.**  
 16 Q. Would you think it odd if the people who  
 17 retained you were concerned about effects to  
 18 their well if they did not ensure that their  
 19 well, if it were to be impacted by your  
 20 analysis, would be shown in the results of your  
 21 analysis?  
 22 **A. On the latter part of your question, I just got**  
 23 **a little lost, can you repeat it?**  
 24 **MR. OLEEN:** I'll actually withdraw  
 25 the question. I have no further questions,

1 Leland D. Rolfs representing the Equus Beds  
 2 Groundwater Management District.  
 3  
 4 **DIRECT EXAMINATION**  
 5 **BY MR. ROLFS:**  
 6 Q. For the record, I'm Leland D. Rolfs representing  
 7 the Equus Beds Groundwater Management District  
 8 No. 2.  
 9 Would you just state your name for the  
 10 record?  
 11 **A. David L. Pope.**  
 12 Q. And what city do you reside in?  
 13 **A. Topeka, Kansas.**  
 14 **MR. ROLFS:** I had understood that  
 15 Mr. Pope's resume or CV was supposed to be  
 16 copied and included with his expert report,  
 17 but it is not in the book, as I understand  
 18 it. I have copies here. Apparently, I'm  
 19 in error, it was actually in Exhibit  
 20 Number 1 - and which book is this - Volume  
 21 I, Exhibit 1.  
 22 **BY MR. ROLFS:**  
 23 Q. Mr. Pope, could you generally describe your  
 24 education?  
 25 **A. Yes, I have BS and MS degrees from Oklahoma**

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1 **State University in agricultural engineering,**  
 2 **with emphasis in water resources and irrigation.**  
 3 Q. Okay. So after you graduated from Oklahoma  
 4 State University, where did you begin employment  
 5 at that time?  
 6 **A. After the service, my first employment was with**  
 7 **Kansas State University. I served as an**  
 8 **extension irrigation engineer for a period of**  
 9 **about five years, both in Manhattan and then**  
 10 **Garden City. I was an assistant professor and**  
 11 **extension irrigation engineer.**  
 12 Q. Okay. And where did you go from there?  
 13 **A. My next position starting in 1976 was working as**  
 14 **the manager of the Southwest Kansas Groundwater**  
 15 **Management District No. 3, that was**  
 16 **headquartered in Garden City, Kansas.**  
 17 Q. What -- what was your position there?  
 18 **A. I was manager of the District, I was responsible**  
 19 **to report to the Board of Directors and handled**  
 20 **all of the activities related to the District.**  
 21 **I was the first manager, and this was early in**  
 22 **the establishment of groundwater management**  
 23 **districts in the state, and so developed the**  
 24 **first management program, all of the records and**  
 25 **activities associated with dealing with the use**

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1 **of water in southwest Kansas.**  
 2 Q. Okay. And what was your next place of  
 3 employment?  
 4 **A. In 1978, I went to work for the Division of**  
 5 **Water Resources, at that time the Kansas Board**  
 6 **of Agriculture, since the Kansas Department of**  
 7 **Agriculture, and I served as assistant chief**  
 8 **engineer for a period of about five years.**  
 9 Q. Okay. And then what was your next job title?  
 10 **A. In 1983, I was selected as chief engineer and**  
 11 **director of the Division of Water Resources**  
 12 **there in the Department of Agriculture and, of**  
 13 **course, carried all of the duties and**  
 14 **responsibilities for that position. I -- I**  
 15 **served in that role until I retired from state**  
 16 **service in 2007.**  
 17 Q. Okay. I guess this might be a good place to  
 18 have you describe generally what your duties  
 19 were as chief engineer.  
 20 **A. As chief engineer, there's a wide range of**  
 21 **responsibilities, I think at that time some 26**  
 22 **or 27 different statutes, to which duties are**  
 23 **explicitly assigned to the position of chief**  
 24 **engineer by the Kansas legislature. Those range**  
 25 **from the ones that are probably more applicable**

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1 here to administration and enforcement of the  
 2 **Kansas Water Appropriation Act but also duties**  
 3 **and responsibilities related to the parts of the**  
 4 **Groundwater Management District Act. I might**  
 5 **just say generally, and come back to those more,**  
 6 **that of the responsibilities of the office,**  
 7 **they're the ones that relate to water use and**  
 8 **water appropriation, et cetera.**  
 9 **Another category is interstate water**  
 10 **issues. The chief engineer serves, by virtue of**  
 11 **his responsibility to administer water rights in**  
 12 **the state, as the state representative to each**  
 13 **of the four interstate river compacts to which**  
 14 **Kansas is a party, along with other members that**  
 15 **are appointed. And as well as represented the**  
 16 **governor on Missouri River issues and other**  
 17 **issues of an interstate nature.**  
 18 **Finally, without dwelling on it, there's a**  
 19 **series of statutes that relate to dams,**  
 20 **reservoirs, levies, flood control works,**  
 21 **drainage, a whole range of duties and**  
 22 **responsibilities related to -- to that for which**  
 23 **the chief engineer is responsible for safety of**  
 24 **dams, et cetera, et cetera. So in total,**  
 25 **there's sort of three major categories of duties**

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1 **and responsibilities of which we're talking**  
 2 **primarily about the water appropriation here**  
 3 **today.**  
 4 Q. In the course of this employment as chief  
 5 engineer, did you ever testify in any cases  
 6 before the United States Supreme Court?  
 7 **A. Yes, I did, several times. I served as an**  
 8 **expert witness in agricultural engineering and**  
 9 **water administration before the Special Masters**  
 10 **appointed by the U.S. Supreme Court in both the**  
 11 **long-running Kansas v. Colorado lawsuit, I think**  
 12 **it's original action No. 105, and testified**  
 13 **several times in that case, which went on for a**  
 14 **number of years, as chief engineer, in those**  
 15 **capacities.**  
 16 **I also had a similar role in regard to the**  
 17 **Kansas v. Nebraska and Colorado case, original**  
 18 **No. 126, again testified in that case and also**  
 19 **was the lead member of a negotiating team that**  
 20 **ultimately led to the settlement of that case**  
 21 **that ended up being a decree of the Supreme**  
 22 **Court.**  
 23 **Unfortunately, due to later violations of**  
 24 **the final settlement stipulation, I was retained**  
 25 **by the State of Kansas to come back and testify**



1 **again in several arbitrations and then two trial**  
2 **segments before a different Special Master of**  
3 **the U.S. Supreme Court to obtain enforcement in**  
4 **that case.**

5 **MR. ROLFS:** I think at this point I  
6 would ask that Mr. Pope be accepted as a  
7 qualified expert in agricultural  
8 engineering and water administration.

9 **PRESIDING OFFICER:** Any objections?  
10 Okay, he's so accepted.

11 **BY MR. ROLFS:**

12 Q. Okay. Mr. Pope, did you create the Aquifer  
13 Storage and Recovery Program for the State of  
14 Kansas?

15 **A. Yes, from a regulatory standpoint.**

16 Q. Okay. I assume we're all referring to it here  
17 as ASR, but I haven't been part of these  
18 hearings so refer to it as the ASR program --

19 **A. Okay.**

20 Q. -- in the future here to shorten the hearing.

21 And how did this program come about, what raised  
22 interest in having this program?

23 **A. I was contacted by representatives of the City**  
24 **of Wichita expressing an interest in**  
25 **establishing an artificial recharge program in**

1 Q. And so was this regulation the authority that's  
2 used to create the ASR program?

3 **A. That's correct.**

4 Q. Could you briefly describe the process in  
5 adopting rules and regulations in the State of  
6 Kansas?

7 **A. Yes. The process essentially begins when a need**  
8 **arises to promulgate a rule in a certain area.**

9 **There are staff discussions and discussions with**  
10 **legal counsel about how to proceed. That**  
11 **results in the drafting of a proposed rule or**  
12 **rules or regulations. During that informal**  
13 **process, at least when I was in office, we**  
14 **tended to also reach out to stakeholders and**  
15 **have informal public meetings as deemed**  
16 **necessary, depending on the scope of the rules,**  
17 **to get input. After that, additional drafting**  
18 **and refinements are made, and the rules are --**  
19 **try to put those in final form.**

20 **There's a economic analysis that's required**  
21 **to take place, we would do that. Then next the**  
22 **proposed rules are submitted to the Office of**  
23 **the Attorney General for approval and to -- for**  
24 **approval of the Secretary of Administration.**  
25 **After those steps are completed, then the -- a**

1 **the Equus Beds Aquifer, and so discussions began**  
2 **in regard to that. It became apparent that we**  
3 **needed to establish some standards, and that**  
4 **led, then, to promulgation of rules and**  
5 **regulations that related to artificial recharge.**  
6 **But it was really precipitated by that interest**  
7 **that we proceeded with.**

8 Q. This program was established in regulation, not  
9 by statute?

10 **A. That's correct.**

11 Q. Okay. If you turn to K.S.A. 82-706(a), the  
12 Water Appropriation Act, be Volume II, item 21.

13 **A. Yeah, I have a copy here.**

14 Q. And could you please read the statute.

15 **A. Yes, you said 82a-706?**

16 Q. 706(a).

17 **A. Oh, 706(a). Yes, that's entitled Rules,**  
18 **Regulations, and Standards, the chief engineer**  
19 **shall adopt, amend, promulgate, and enforce such**  
20 **reasonable rules, regulations, and standards**  
21 **necessary for the discharge of his or her duties**  
22 **and for the achievement of the purposes of this**  
23 **act pertaining to the control, conservation,**  
24 **regulation, allotment, and distribution of the**  
25 **water resources of the state.**

1 **public hearing is scheduled, and there's -- we**  
2 **often did that, depending on the scope of the**  
3 **rules, at one or more locations in the state.**  
4 **And, of course, there are notices of those**  
5 **things.**

6 **After the hearing and considering the**  
7 **testimony and feedback, then the rules are**  
8 **adopted. There is an additional step required**  
9 **in that agency rules and regulations are**  
10 **required to be reviewed with the Committee on**  
11 **Rules and Regulations of the Kansas legislature.**  
12 **And after that has been completed and**  
13 **considering all of the feedback, unless there's**  
14 **changes, then the rules are published in the**  
15 **Kansas Register and become final.**

16 Q. Okay. In Kansas what is the effect of a  
17 lawfully adopted rule and regulation?

18 **A. A lawfully adopted rule and regulation has the**  
19 **force and effect of law by statute.**

20 Q. So as an administrator, once you adopt a rule  
21 and regulation, then you must follow that rule  
22 and regulation until such time as it's changed  
23 or amended?

24 **A. That's correct.**

25 Q. What was your involvement -- did you have any

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1 involvement with the ASR program as proposed by  
 2 the City of Wichita?  
 3 **A. Yes, I did. There was interactions with the**  
 4 **City in the -- in very early parts of the**  
 5 **process, especially, but my actual role**  
 6 **ultimately was to review the proposal, and I did**  
 7 **that and approved Phase I of the ASR.**  
 8 Q. And you were general -- were you supportive of  
 9 having an ASR program in the State of Kansas?  
 10 **A. Yes, I think that's a fair statement. I was**  
 11 **aware of the City's interest in an artificial**  
 12 **recharge program and felt that there was merit**  
 13 **in considering that proposal, recognizing it was**  
 14 **a part of the City's long-term water supply**  
 15 **planning effort, and it appeared that there was**  
 16 **some merit to consider it.**  
 17 Q. During the process of considering this  
 18 application with the City of Wichita, did the  
 19 City of Wichita propose using the concept of  
 20 passive recharge credits?  
 21 **A. No, they did not.**  
 22 Q. They did not propose --  
 23 **A. Oh, I'm sorry, I misunderstood. Yes, they did**  
 24 **propose the concept of passive recharge in those**  
 25 **early stages.**

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1 Q. So was that idea discussed and considered at  
 2 length or ...  
 3 **A. Yes, it actually was. From an internal**  
 4 **standpoint, we had extensive review of that**  
 5 **concept, that issue at the staff level and with**  
 6 **legal counsel and myself. And both at the time**  
 7 **we were promulgating the rules and regulations**  
 8 **that were ultimately adopted and in**  
 9 **consideration of Phase I of the ASR, we**  
 10 **considered it carefully and ultimately**  
 11 **determined that passive -- the passive recharge**  
 12 **concept was not consistent with the law because**  
 13 **no physical recharge actually occurred using**  
 14 **that method.**  
 15 Q. So what -- I guess maybe I should have you  
 16 describe what is -- what did you understand the  
 17 passive recharge credit to be?  
 18 **A. Well, I think the general description that I**  
 19 **understood, and I believe is correct, is that it**  
 20 **would result in recharge credits being accrued**  
 21 **as a result of not pumping water from the City's**  
 22 **existing wells, their well field.**  
 23 Q. So as a result of all this discussion and after  
 24 the City's proposal, did you ultimately approve  
 25 the concept of passive recharge credits in Phase

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1 I?  
 2 **A. No, I did not.**  
 3 Q. And could you point to any specific language in  
 4 your order approving the ASR program dealing  
 5 with that topic?  
 6 **A. Yes. Let me see.**  
 7 Q. Item 26 of Volume II and page 11.  
 8 **A. I -- I think I have it here but I --**  
 9 Q. Okay.  
 10 **A. Basically, in the August 8th, 2005 approval of**  
 11 **the applications for artificial recharge in**  
 12 **Phase I, that order was a findings, conclusions**  
 13 **and order, and included within that was**  
 14 **conclusion number 3, the chief engineer**  
 15 **indicated, quote, that passive recharge credits**  
 16 **should not be allowed because they are not,**  
 17 **quote, artificial recharge, end of quote, as**  
 18 **defined in Kansas Administrative Regulation, or**  
 19 **K.A.R., 5-1-1 because no source water is being**  
 20 **artificially recharged to create those credits.**  
 21 **In addition, paragraph number 2 of the order**  
 22 **says, quote, that passive recharge credits shall**  
 23 **not be allowed, end of quote.**  
 24 Q. So, ultimately, you approved the concept -- or  
 25 you approved Wichita's ASR project while

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1 specifically denying the concept of passive  
 2 recharge credit; is that correct?  
 3 **A. That's correct.**  
 4 Q. Did you have any involvement with Phase II of  
 5 Wichita's ASR project?  
 6 **A. Yes, I did. My involvement with Phase II was**  
 7 **more limited. The application for Phase II was**  
 8 **filed while I was chief engineer, shortly**  
 9 **before -- I think in late 2006 but -- so I**  
 10 **received the application and there was some**  
 11 **initial processing, but I retired in 2007; and**  
 12 **at that point in time, the application was not**  
 13 **ready for action, and so it -- it did not get**  
 14 **acted on during my tenure.**  
 15 Q. Okay. Was the application -- do you know if the  
 16 application was ultimately approved?  
 17 **A. Yes.**  
 18 Q. And who would have approved that?  
 19 **A. The Phase II application was approved by David**  
 20 **Barfield, my successor as chief engineer.**  
 21 Q. And in that order approving Phase II, was the  
 22 topic of artificial recharge -- passive recharge  
 23 credits discussed in that order?  
 24 **A. Yes, it was. That order, which I believe was**  
 25 **approved September 18, 2009, included paragraph**

1 **number 11(a) of the findings and also paragraph**  
2 **number 2 of the order, which both provide,**  
3 **quote, that passive recharge credits shall not**  
4 **be allowed, end of quote.**

5 Q. Okay. Sorry, we're trying to find the exhibit  
6 number here.

7 **A. Okay.**

8 Q. Do you have -- happen to have it, Mr. Pope?

9 **A. Well --**

10 **PRESIDING OFFICER:** Phase II?

11 **MR. ROLFS:** Yes.

12 **BY MR. ROLFS:**

13 Q. It's Volume II, Exhibit 28.

14 **A. Let's see. I haven't gotten real familiar with**  
15 **this system, let me --**

16 Q. 28.

17 **PRESIDING OFFICER:** 28.

18 **BY MR. ROLFS:**

19 Q. I'm sorry.

20 **A. It's 28?**

21 Q. Page 5. It's in Volume II. Could you briefly  
22 describe what you understand the City of  
23 Wichita's current proposal to be?

24 **A. I think in general terms it proposes two main**  
25 **things, the first is to lower the index water**

1 room.)

2 **A. Let me get to the right place here, but I -- I**  
3 **think it's important first when we're describing**  
4 **the regulations related to ASR to look at the**  
5 **definitions --**

6 **BY MR. ROLFS:**

7 Q. Okay.

8 **A. -- of terms in K.A.R. 5-1-1, the definitions of**  
9 **these rules and regulations for the Water**  
10 **Appropriation Act. And in that regard, K.A.R.**  
11 **5-1-1 definition (e) says that aquifer storage**  
12 **means the act of storing water in an aquifer by**  
13 **artificial recharge for subsequent diversion and**  
14 **beneficial use. Item (f) says, aquifer storage**  
15 **and recovery system means the physical**  
16 **infrastructure that meets the following**  
17 **conditions. And (f)(1) under that is, is**  
18 **constructed and operated for artificial**  
19 **recharge, storage, and recovery of source water,**  
20 **and number 2, consists of apparatus for**  
21 **diversion, treatment, recharge, storage,**  
22 **extraction and distribution. Next I want to**  
23 **mention that item (g) just after that defines**  
24 **artificial recharge means the use of source**  
25 **water to artificially replenish the water supply**

1 **levels in the recharge area; secondly is to --**  
2 **it proposes a concept of aquifer maintenance**  
3 **credits, or AMCs, I guess, is the acronym we**  
4 **use.**

5 Q. And what do you understand AMCs to be?

6 **A. The concept appears to be one of proposing to**  
7 **receive credit for not pumping water from the**  
8 **City's well field normally associated with the**  
9 **diversion and treatment of water provided from**  
10 **the Little Arkansas River, but that happens**  
11 **whenever recharge capacity is -- physical**  
12 **recharge capacity is not available.**

13 Q. Okay. Do any of the regulations that you  
14 adopted creating the program expressly authorize  
15 AMCs?

16 **A. No.**

17 Q. What regulations -- what would the regulations  
18 ultimately provide for in terms of approving or  
19 disapproving of AMCs, what regulations would you  
20 point to? And the regulations are --

21 **A. Well, I think it might be helpful --**

22 Q. This would be found in Volume II, Exhibit 22 in  
23 terms of where the regulations are in the  
24 record.

25 (Mr. Stucky entered the hearing

1 in an aquifer.

2 There's two other definitions I think that  
3 are particularly relevant here, the first of  
4 those is still in K.A.R. 5-1-1, and it's (mmm),  
5 recharge credit means the quantity of water that  
6 is stored in the basin storage area and that is  
7 available for subsequent appropriation for  
8 beneficial use by the operator of the aquifer  
9 storage and recovery system. And, finally, in  
10 the definitions, I would refer to (yyy),  
11 entitled source water means water used for  
12 artificial recharge that meets the following  
13 conditions, then there's a list of four items.  
14 Number 1, is available for appropriation for  
15 beneficial use; is above base flow stage in the  
16 stream; 3, is not needed to satisfy minimum  
17 desirable streamflow requirements; and, 4, will  
18 not degrade the ambient groundwater quality in  
19 the basin storage area.

20 So those terms, I think, are important as  
21 one looks at what an artificial recharge project  
22 is and how that needs to occur to be in  
23 compliance with the rules and regs.

24 Q. Do you think that the AMCs as proposed by the  
25 City of Wichita meet the criteria of those

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1 regulations?  
 2 **A. No, I do not believe it does.**  
 3 Q. Shifting topics here, can changes be made to  
 4 water rights in the State of Kansas?  
 5 **A. Yes.**  
 6 Q. And how is that done?  
 7 **A. Yes, there's a process followed and basically --**  
 8 **let me get here.**  
 9 Q. Are we in statutes or regulations here?  
 10 **A. Yeah, I wanted to go to the statutes first and I**  
 11 **was --**  
 12 Q. Let's go to Exhibit 21, Kansas Water  
 13 Appropriation Act.  
 14 **A. Yes, we're at K.S.A. 82a-708(b), and in essence,**  
 15 **to paraphrase, this statute authorizes**  
 16 **applications to be filed for a change in the**  
 17 **place of use, the point of diversion, or the use**  
 18 **made of water. And, basically, it says that an**  
 19 **owner of a water right may -- may change any one**  
 20 **of those three, any one or more of those three**  
 21 **attributes of the water right if it meets the**  
 22 **criteria in the statutes and the rules.**  
 23 Q. Do the statutes expressly authorize any other  
 24 types of changes to existing water rights?  
 25 **A. No, just those three things, point of diversion,**

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1 **place of use, and use made of water.**  
 2 Q. In practice, are there any exceptions to that,  
 3 making changes to water rights?  
 4 **A. Well, I would say there's -- if you go back into**  
 5 **history a number of years, there was a period**  
 6 **when the Division of Water Resources issued**  
 7 **findings and orders and sometimes correction**  
 8 **orders that were done for the purpose of tying**  
 9 **down more specifically the actual location of**  
 10 **authorized wells or points of diversion.**  
 11 **I might just say in general that prior to**  
 12 **the time that that started occurring, which was**  
 13 **about whenever I went to work for the Division**  
 14 **of Water Resources, points of diversion were**  
 15 **described very generally, typically something**  
 16 **like well or wells within, say, a 40-acre tract**  
 17 **or even a larger tract of land. And it was**  
 18 **determined that in order to be able to better**  
 19 **consider things like applications for changes in**  
 20 **a point of diversion or to actually better**  
 21 **administer and enforce the law that it was**  
 22 **necessary to more specifically define those**  
 23 **points of diversion. And so there was a process**  
 24 **of going through the records and looking at**  
 25 **field inspection information and issue -- orders**

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1 **were then issued to essentially better define**  
 2 **those.**  
 3 Q. Okay. So other than the three things you  
 4 pointed out in 708(b) and the minor corrections,  
 5 no other changes are authorized to existing  
 6 water rights under the statute; is that correct?  
 7 **A. Yes. I think I understood your question, yeah.**  
 8 Q. Okay. Follow up a little bit further, in  
 9 Kansas, can a water right ever be expanded after  
 10 it's created?  
 11 **A. No, it's been long-standing practice, both in**  
 12 **Kansas and elsewhere in the states in general**  
 13 **that follow the appropriation doctrine, that**  
 14 **once a permit is issued and the time to perfect**  
 15 **that water right has occurred, and in the case**  
 16 **of vested rights, once the vested rights were**  
 17 **determined, that the extent of the use cannot be**  
 18 **enlarged. In general, as the years went by, the**  
 19 **consumptive use could not be increased under**  
 20 **that water right.**  
 21 Q. Okay. Can the maximum annual quantity  
 22 authorized by that right ever be increased under  
 23 that existing right?  
 24 **A. No, it could not. Once that water right that**  
 25 **has that priority date has gone through that**

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1 **perfection process it could not be increased.**  
 2 Q. And can the maximum instantaneous diversion rate  
 3 ever -- authorized rate ever be increased?  
 4 **A. No.**  
 5 Q. I believe you mentioned that the consumptive use  
 6 could not be increased after the water right was  
 7 established, what is the basis for that? Is  
 8 that a regulation?  
 9 **A. It is a regulation. It's a -- let me see. I**  
 10 **believe it's 5-5-3, if I recall. Let me**  
 11 **double-check that.**  
 12 Q. This would be Volume II, Exhibit 22. 21 is the  
 13 Water Appropriation Act, I'm sorry.  
 14 **A. That's correct. And Kansas Administrative**  
 15 **Regulation 5-5-3, entitled Change in Consumptive**  
 16 **Use says that the extent of consumptive use**  
 17 **shall not be increased substantially after a**  
 18 **vested right has been determined or the time**  
 19 **allowed in which to perfect the water right has**  
 20 **expired, including any authorized extension of**  
 21 **time to perfect the water right.**  
 22 Q. Okay. Are there any other examples in  
 23 regulation that restrict expansion of water  
 24 rights?  
 25 **A. Yes, there's an additional regulation related to**

1 this that deals explicitly with irrigation  
2 issues and that by analogy, and that regulation  
3 was promulgated, I believe that's 5-5-11. Let  
4 me verify that. Yes. That regulation basically  
5 limits an increase in the irrigated acreage  
6 under an existing water right when considering a  
7 application for a change in place of use.

8 And, again, the concept that we were  
9 dealing with then was if an existing water right  
10 covered certain number of acres, let's say  
11 160 acres, and if that applicant wanted to  
12 expand the acreage under the water right, he  
13 could file an application for a change in place  
14 of use, but the rules were set up so that that  
15 process would not result in an increase in  
16 consumptive use. So some changes can be made  
17 and increases occurred, but there's an  
18 adjustment or a condition of the water right  
19 instituted that prevents an increase in  
20 beneficial consumptive use.

21 Q. So in your opinion, would approval of the AMC  
22 concept increase consumptive use of existing  
23 water rights in violation of those regulations?

24 A. It's my understanding from the application that  
25 that is a likely result.

1 Q. Do you have any other thing you would like to  
2 add as to why you feel that would be the case?  
3 A. Well, I think the fundamental issue is that  
4 the -- under the operation of the ASR in Phase I  
5 and Phase II there's physical -- there's  
6 diversion of water from the source, treatment,  
7 and actual physical recharge of source water  
8 through artificial recharge.

9 With the AMC proposal, that's not the case.  
10 There would be -- there's not that physical  
11 artificial recharge of source water that occurs  
12 and, therefore, there's credits that are --  
13 would be proposed under the AMC process that --  
14 one way to look at it would be that if you --  
15 when there's not physical recharge capacity  
16 available and water's available from the source  
17 and it's provided at the place of the recharge  
18 facilities, then that typically occurs in a  
19 wetter period of time, when streamflow is  
20 available, water levels are high in the aquifer;  
21 but when those credits would be proposed to be  
22 withdrawn typically occur during a much drier  
23 period of drought, you know, the City's planning  
24 related to 1 percent drought, for example, and  
25 so I think that has a significant effect when

1 there is not that physical recharge component.

2 Q. Do you think that the lowering of the minimum  
3 index levels could also have that same effect in  
4 terms of increasing consumptive use?

5 A. Well, it certainly provides an opportunity for  
6 recharge credits to be withdrawn at a lower  
7 level in the aquifer, and so the combination of  
8 lowering those index levels and then not  
9 requiring the physical recharge of water has  
10 that problem.

11 Q. Okay. Is the City -- what the City is proposing  
12 to do would -- fundamentally different than  
13 other water users simply wanting to get credit  
14 for not pumping an alternate supply or a standby  
15 source?

16 A. No, I think in -- in general terms that the  
17 proposal is not that different than what other  
18 water users would like to do in some cases.

19 Q. Could you give an example of that?

20 A. Yes, I -- many water users in the State of  
21 Kansas have both surface water and groundwater  
22 rights, in some cases they have access to  
23 storage, surface water storage. And it's a --  
24 kind of a normal situation to where water users,  
25 whether they be a city or a irrigator or

1 whatever, tend to want to use their surface  
2 water first when it is available because during  
3 droughts or dry periods it may not be available.  
4 So during those periods, again, where they have  
5 surface water and groundwater rights, that would  
6 occur, and during that time period, often they  
7 would not pump all or most of their groundwater  
8 right that's authorized for the same purpose and  
9 often on the same place of use.

10 If a methodology like is proposed by the  
11 City to use AMCs would be allowed in the  
12 situation I'm trying to describe, it would be  
13 pretty easy for people to manipulate the system  
14 to where they again use that surface or not pump  
15 the groundwater, but then when you get into a  
16 dry period or other circumstances, they would  
17 then want to pump their full groundwater right,  
18 plus credits accrued from not pumping those  
19 groundwater rights during those wetter periods;  
20 and, again, they would double up and be able to  
21 pump a lot more water from the groundwater  
22 source. And that's where you run into the  
23 problem because that can have an adverse effect  
24 on the aquifer, it can cause more stream  
25 depletion, potential impairment between users,

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1 matters of that nature.  
 2 So this -- I should mention, I guess you  
 3 asked by way of example, I'm aware of  
 4 circumstances like this where there's surface  
 5 water, groundwater rights and some storage in  
 6 the upper part of the Arkansas River Basin,  
 7 essentially state line to Garden City, you have  
 8 the Solomon River Basin in north central --  
 9 northwest, north central, the Smoky Hill River  
 10 Basin, the Republican River Basin, all of these  
 11 are examples where you have surface water and --  
 12 rights and groundwater rights. You also have,  
 13 in most of the ones I referred to, reservoirs;  
 14 often reservoirs by the -- constructed by the  
 15 Bureau of Reclamation, some cases the Corps of  
 16 Engineers, where users have -- can participate  
 17 in an irrigation district which provides for  
 18 release of water from storage. And, again,  
 19 that's going to mean an opportunity to not use  
 20 the groundwater every year.  
 21 And so those are the kinds of other  
 22 situations in the state where getting credit for  
 23 not pumping a well can really lead to unintended  
 24 consequences.  
 25 Q. Okay. Has the Kansas legislature passed laws

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1 specifically allowing certain flexibility in how  
 2 water right holders can use their water?  
 3 Sorry, I apologize, between my eyeglasses  
 4 and being unable to read and get to the  
 5 microphone.  
 6 A. Yes, to answer your question, there -- there has  
 7 been an interest by water right holders to -- to  
 8 have more flexibility in their use of water  
 9 because there are wet years and dry years; and,  
 10 normally, water rights are sufficient for most  
 11 dry years, but you can have extremes. And so in  
 12 response to that, in addition to a second goal  
 13 of -- while giving more flexibility but also to  
 14 save water, to have a conservation goal, those  
 15 two factors led to the Kansas legislature  
 16 enacting two different statutes that relate to  
 17 that.  
 18 The first example I would use is K.S.A.  
 19 82a-745, and that statute basically allows one  
 20 or more water right holders to - these are  
 21 groundwater rights now - to enter into a consent  
 22 agreement with the chief engineer and agree to  
 23 develop a management program that will give them  
 24 some extra flexibility, them being the water  
 25 right holder, but also requiring it to have a

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1 conservation, in other words a reduction in use,  
 2 which these things get a little complicated in  
 3 terms of looking at historic use of water  
 4 compared to authorized and these various  
 5 factors, but there's -- that's why you have this  
 6 consent order to spell that out in the  
 7 management program. And the goal there again is  
 8 to conserve water, that's the real motivation of  
 9 this statute, but also to give some flexibility  
 10 to the water users. And this particular program  
 11 has been used with pretty considerable success  
 12 in southwest Kansas in particular and some other  
 13 areas where a number of these water conservation  
 14 areas have been established.  
 15 A second program, I think was actually  
 16 adopted earlier, was under K.S.A. 82a-736, and  
 17 it establishes what's known as multi-year flex  
 18 accounts. And this -- the motivation for this  
 19 program, as I recall, was during a very serious  
 20 drought period, users were, particularly  
 21 irrigators were trying to - I think it happened  
 22 with cities too - but were trying to meet their  
 23 needs -- meet the needs of their beneficial use  
 24 while staying within the limits of their annual  
 25 water rights. Water rights are based on a

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1 certain number of acre-feet per calendar year.  
 2 And so there was some efforts through term  
 3 permits and various things to help deal with  
 4 this extreme drought, but this program then was  
 5 put into place to allow a user to voluntarily  
 6 enter into a flex account arrangement where  
 7 they'd have a multi-year period but again also  
 8 would have to limit their water use. So it  
 9 wasn't just a license to use more water; it was  
 10 by the other -- the other goal was what was to  
 11 be achieved.  
 12 Q. Okay. In your opinion, what do you think is the  
 13 ultimate result of allowing AMCs?  
 14 A. Well, my concern is that by allowing AMCs where  
 15 actual source water is not physically recharged  
 16 that the AMC methodology would allow recharge  
 17 credits to be accrued without physically  
 18 recharging water. And -- and I think as I  
 19 alluded to earlier, I believe this could, and  
 20 most likely would, essentially allow the City to  
 21 develop recharge credits, again, without  
 22 physical recharge, but then withdraw those  
 23 during a drought period; and this then could  
 24 result in substantially more water use and  
 25 effect on the aquifer during that period, which

1 might go on for seven or eight years.  
 2 Q. In terms of priority, what's your understanding  
 3 about when AMCs could be exercised as proposed?  
 4 **A. When -- under a traditional physical recharge**  
 5 **operation, the understanding, I think, I had at**  
 6 **the time, at least, was sort of analogous to**  
 7 **storage in reservoir. And so physical recharge**  
 8 **would occur into the aquifer under the Phase I**  
 9 **and Phase II and the physical recharge option**  
 10 **currently, and once that water is lawfully**  
 11 **stored, then it's really the City's water. It's**  
 12 **really -- and, again, using the analogy of a**  
 13 **surface water reservoir, once water is lawfully**  
 14 **diverted under a water right, stored in that**  
 15 **reservoir, it's considered property of the water**  
 16 **right owner.**  
 17 If that same thing is true for artificial  
 18 recharge, then that's -- that's fine because the  
 19 City would have control over the water they  
 20 physically recharged. But under the AMC  
 21 proposal where they're not physically recharging  
 22 water, arguably they could claim ownership of  
 23 that amount of credits that they would have  
 24 accrued under AMCs and that's water they never  
 25 physically put there. And so they have to be

1 taking water, since they didn't physically put  
 2 it there, they have to be taking water, then,  
 3 that the water right holders were entitled to  
 4 pump because that's their source of supply. And  
 5 that's where you would get into this injury  
 6 issue of adversely affecting other water right  
 7 holders in that area.  
 8 Q. Is it your understanding the water -- the  
 9 aquifer is fully appropriated or not?  
 10 **A. Well, yes, we're operating in the presumption**  
 11 **here, and I guess it should be said, is that the**  
 12 **area where the City's municipal well field is,**  
 13 **and other areas, for which more appropriations**  
 14 **exist than what the current safe yield rules and**  
 15 **regulations of the Equus Beds Groundwater**  
 16 **Management District No. 2 allow, that's an area**  
 17 **we consider fully appropriated, if not**  
 18 **over-appropriated. And so if -- if that's the**  
 19 **case, then, of course, new permits wouldn't be**  
 20 **allowed except for minor exceptions and all of**  
 21 **those other implications. I don't know whether**  
 22 **I understood fully your full question.**  
 23 Q. Yes, I think that answers the question.  
 24 **A. Okay.**  
 25 Q. Based on your over 40 years of experience with

1 water rights and water issues, being a chief  
 2 engineer, and your review of the documents in  
 3 this case, what were the conclusions in your  
 4 expert report, then?  
 5 **A. Yes, I have --**  
 6 Q. Now, this would be Volume I, Exhibit 2, your  
 7 expert report.  
 8 **A. Yeah, I think I drew six different conclusions**  
 9 **and opinions, they're in my expert report. And**  
 10 **the first of those is simply just saying that**  
 11 **based on my experience with administration of**  
 12 **Kansas water law and regulations that the City's**  
 13 **proposed ASR aquifer maintenance credit, or AMC,**  
 14 **proposal does not -- well, it's not consistent**  
 15 **with the provisions of the Water Appropriation**  
 16 **Act, K.S.A. 82a-701 et seq., nor the regulations**  
 17 **promulgated thereunder, which I've been**  
 18 **discussing here today during my testimony, most**  
 19 **specifically K.A.R. 5-1-1, 5-12-1 through**  
 20 **5-12-4, as well as K.A.R. 5-22-1, 5-22-10, and**  
 21 **5-22-17. Those last three cites are the rules**  
 22 **adopted for the Groundwater Management District**  
 23 **No. 2.**  
 24 Q. And did you adopt those regulations on behalf of  
 25 the District?

1 **A. Yes, I did.**  
 2 Q. Please continue.  
 3 **A. My second item was that the proposed use of AMCs**  
 4 **is a form of passive recharge credits, which are**  
 5 **not authorized by the Kansas Water Appropriation**  
 6 **Act, they are not allowed by the chief**  
 7 **engineer's ASR rules and regulations, and that's**  
 8 **because of the definitions that I referred to**  
 9 **earlier, but I'm going to mention specifically**  
 10 **K.A.R. 5-12-1(a) provides that an operator may**  
 11 **store water in an aquifer storage and recovery**  
 12 **system under a permit to appropriate water for**  
 13 **artificial recharge if the water appropriated is**  
 14 **source water. And source water is defined by**  
 15 **the definitions, K.A.R. 5-1-1(yyy), as I said**  
 16 **earlier in my testimony.**  
 17 **Also, K.A.R. 5-1-1(g) defines artificial**  
 18 **recharge as, quote, the use of source water to**  
 19 **artificially replenish the water supply in the**  
 20 **aquifer, so that source water being available is**  
 21 **very important. And, finally, I've noted in my**  
 22 **report the definitions of recharge credit and**  
 23 **noted that AMCs do not meet this definition of**  
 24 **source water. In particular, the definition of**  
 25 **source water does not include an offset for**

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1 water not pumped from the aquifer as proposed by  
 2 the Wichita ASR.  
 3 And, finally, on the next item, I've noted  
 4 that passive recharge credits are prohibited by  
 5 orders issued by the chief engineer during Phase  
 6 I and Phase II. If the ASR project is not  
 7 adding physical recharge, then AMCs that allow  
 8 credits for not pumping City wells in the basin  
 9 storage area are passive recharge credits that  
 10 should not be allowed.  
 11 And, finally, I guess I would -- I noted in  
 12 my report, we didn't spell out a lot of detail  
 13 in my testimony so far, but the Burns &  
 14 McDonnell report, which I know is right here  
 15 as --  
 16 Q. It's in the black volume.  
 17 A. Black volume. So I can't read from here,  
 18 it's -- whether there's an exhibit number, but  
 19 this is the report dated March 12, 2018,  
 20 entitled ASR Permit Modification Proposal,  
 21 Revised Minimum Index Levels and Aquifer  
 22 Maintenance Credits, that report.  
 23 It illustrates that the City demand  
 24 assigned to the Equus Beds well field and ASR  
 25 during a 1 percent simulated drought could reach

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1 as high as 59,907 acre-feet in some years,  
 2 which, of course, is significantly more than the  
 3 40,000 acre-feet per year authorized by the  
 4 City's well field. And if you total the well  
 5 field and ASR demands for the eight years  
 6 drought simulated in table 2.3 of the report I  
 7 just cited, that would result in 363,850  
 8 acre-feet, or 43,850 acre-feet more for that  
 9 eight-year period than the water rights  
 10 authorized by the City's Equus Beds well field.  
 11 Of course, in an eight-year period, ordinarily  
 12 their well field would allow 320,000 acre-feet  
 13 to be diverted.  
 14 So my conclusion here was if ASR credits  
 15 are not based on physical recharge credits, over  
 16 time, and especially during an extended drought,  
 17 the accumulation of recharge credits by the City  
 18 through the proposed ASR by both physical  
 19 recharge credits and the AMC could reach an  
 20 amount that would adversely affect the ability  
 21 of other water users to exercise their rights  
 22 and certainly would be water -- more water taken  
 23 from the system.  
 24 And so finally, I -- my final conclusion  
 25 was that the Wichita ASR proposal should not be

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1 approved in its current form.  
 2 MR. ROLFS: At this point, I'd like  
 3 to move admission of District Exhibits 1,  
 4 2, 23 through 35 and 38, which are  
 5 Mr. Pope's resume, expert report, and the  
 6 documents listed at the end of his report.  
 7 MR. MCLEOD: Cumulative as to the  
 8 report, it's an objection.  
 9 MR. OLEEN: I am not objecting, I'm  
 10 just asking, Mr. Rolfs, that you give that  
 11 list one more time of the tabbed documents  
 12 that you are moving to admit.  
 13 MR. ROLFS: I believe it's District  
 14 Exhibits Numbered 1, 2, 21 through 35, and  
 15 38. And the rules and regulations and the  
 16 statutes, I believe, were to be judicially  
 17 noticed.  
 18 PRESIDING OFFICER: Yeah, the rules  
 19 and regs and the MOUs, the memorandums of  
 20 understanding, have all been  
 21 administratively noticed. So the items in  
 22 addition to that, the 1 and 2, would be?  
 23 MR. ROLFS: His resume and --  
 24 PRESIDING OFFICER: The resume and  
 25 the expert report.

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1 MR. ROLFS: -- his expert report?  
 2 PRESIDING OFFICER: Okay. Any  
 3 objection?  
 4 MR. OLEEN: No.  
 5 PRESIDING OFFICER: Okay. Then  
 6 Exhibit 1 and 2 will be admitted. The  
 7 other items are already included in the  
 8 record and administratively noticed.  
 9 MR. ROLFS: The items listed at the  
 10 end of Mr. Pope's report include -- include  
 11 Exhibits 21 through 35 and 38 which are not  
 12 rules and regulations.  
 13 PRESIDING OFFICER: Oh, I'm sorry.  
 14 MR. ROLFS: The Water Appropriation  
 15 Act is 21. 25 through 35, I guess, and  
 16 30 -- 25 through 35 and 38. I'm sorry.  
 17 Sorry about the confusion. I feel like  
 18 I've jumped into the middle of this  
 19 hearing, having trouble catching up.  
 20 A. And I would note that item numbers 10 and 11  
 21 that I referred to in my report are the two  
 22 items in the black book.  
 23 PRESIDING OFFICER: The proposal?  
 24 A. Yes.  
 25 PRESIDING OFFICER: And?



1 **A. The letter March 12th, 2018 to the Chief**  
2 **Engineer Barfield. And 11 was the March 12th**  
3 **Burns & McDonnell report.**

4 **PRESIDING OFFICER:** I know the  
5 proposal is in.

6 **MR. OLEEN:** I wonder if we might go  
7 off the record to confer about what items  
8 have not already been admitted and taken  
9 judicial notice of.

10 **PRESIDING OFFICER:** Okay. Let's go  
11 off the record for a minute.

12 (Thereupon, a recess was taken;  
13 whereupon, the following was had.)

14 **PRESIDING OFFICER:** Let's go back on  
15 the record. Mr. Rolfs.

16 **MR. ROLFS:** Yes, we were previously  
17 discussing which exhibits we wanted to move  
18 admittance to, and during the break we had  
19 a discussion to try to resolve which ones  
20 had been admitted. As I said earlier, we  
21 wanted to admit Mr. Pope's resume, his  
22 expert report, and then the documents  
23 listed at the end of his expert report. To  
24 the extent that those are not admitted, I  
25 would like to move admittance. At this

1 they're already in?

2 **MR. MCLEOD:** No, I think that the  
3 expert report would be cumulative. No  
4 objection to the others.

5 **PRESIDING OFFICER:** Oh, okay. Noted  
6 but 1, 2, 30, 31, 34, 35 will be -- and 38  
7 will be admitted. Yes.

8 **MR. ROLFS:** Thank you, that's all  
9 the questions I have at this time, I  
10 reserve the right to do redirect.

11 **PRESIDING OFFICER:** Okay, thank you.  
12 Mr. McLeod.

13 **MR. MCLEOD:** Thank you.  
14

15 **CROSS-EXAMINATION**  
16 **BY MR. MCLEOD:**

17 Q. Mr. Pope, in the days when you were chief  
18 engineer and you were reviewing, making  
19 decisions on the ASR Phase I application, do you  
20 recall whether Groundwater Management District 2  
21 made any recommendation to the chief engineer as  
22 far as what should happen with the passive  
23 recharge credit concept?

24 **A. I don't explicitly -- explicitly recall. I am**  
25 **aware of the memorandum of understanding, the**

1 point, we believe those numbers are  
2 Groundwater Management District Exhibits  
3 Number 1, 2, 30, 31, 34, 35, and 38.

4 **PRESIDING OFFICER:** Okay.

5 **MR. ROLFS:** If it turns out later  
6 that other ones have not been admitted that  
7 were -- if it turns out later that we've  
8 made an error and not gotten all the ones  
9 from Mr. Pope's report admitted, I would  
10 like to have them admitted.

11 **PRESIDING OFFICER:** So it's your  
12 impression that the ones that you're not  
13 listing have already been admitted?

14 **MR. ROLFS:** That is correct. After  
15 lengthy discussion.

16 **PRESIDING OFFICER:** Okay. I'm going  
17 to have to leave it to your legal team to  
18 keep an eye on that.

19 **MR. ROLFS:** That's fine.

20 **PRESIDING OFFICER:** As to 1, 2, 30,  
21 31, 34, 35, and 38, are there objections to  
22 their admission?

23 **MR. MCLEOD:** Cumulative as to the  
24 report.

25 **PRESIDING OFFICER:** So you think

1 **first one, as well as the second one later. I**  
2 **would have to look at it to see if there was any**  
3 **reference to that. But I -- I think we did**  
4 **receive recommendations from GMD2, I just don't**  
5 **recall the detail of that.**

6 Q. And, Mr. Pope, I think you indicated that when  
7 the -- when the permit was approved for ASR  
8 Phase II, you had already moved on, and it was  
9 David Barfield who approved that Phase II  
10 permit, correct?

11 **A. That's correct.**

12 Q. And the Phase II permit that Mr. Barfield  
13 approved, it also had language in it saying that  
14 the passive recharge credits would not be  
15 permitted, didn't it?

16 **A. Yes, it did.**

17 Q. Mr. Pope, just to fill in the record, and I will  
18 admit to some degree of curiosity on my part,  
19 you referenced K.A.R. 5-5-3, which speaks to  
20 consumptive use not being increased  
21 substantially. And for purposes of that  
22 regulation, at least when you were chief  
23 engineer, what did substantially mean?

24 **A. It was recognizing that -- it's hard to be**  
25 **absolute given the science and the computations**

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1 that are available, but, and the records in some  
 2 cases, but the -- the best example I guess I can  
 3 cite, because it is spelled out in the rule, is  
 4 that portion of the matter related to  
 5 irrigation, and I think I cited K.A.R. 5-5-11.  
 6 And in that regard, in terms of irrigated  
 7 acreage being expanded, I think we used the term  
 8 10 percent. Now, that's not an end all in all  
 9 respects; I'm just saying I'd have to  
 10 double-check that. But the idea is it's not  
 11 absolute, but you're really not wanting  
 12 something that's measurable or significant.  
 13 Q. But in the instance of somebody expanding the  
 14 area subject to agricultural use permit, it  
 15 might be as much as 10 percent?  
 16 A. Yes. I want to take another look at that as we  
 17 speak here since you're asking a very explicit  
 18 question. And, again, this relates to  
 19 irrigation, but it was the -- there's a  
 20 reference in K.A.R. 5-5-11(b) that says, an  
 21 application to change the authorized place of  
 22 use for irrigation purposes which would permit  
 23 the applicant to exceed base acreage by 10 acres  
 24 or 10 percent, whichever is greater -- whichever  
 25 is less, I'm sorry, shall not be approved

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1 because it would result in a substantial  
 2 increase in the net consumptive use in violation  
 3 of K.A.R. 5-5-3.  
 4 And there is some additional language here  
 5 that one would actually look at in terms of a  
 6 few things like when you have identical places  
 7 of use and not and all those things. But I  
 8 don't believe that same language is explicitly  
 9 set forth in rules related to artificial  
 10 recharge or municipal use in terms of spelling  
 11 it out in that much detail.  
 12 Q. Mr. Pope, you answered some questions about your  
 13 understanding of the City's proposal. Have you  
 14 read the City's proposal?  
 15 A. I've looked at it in some detail,  
 16 particularly -- but really focusing on just  
 17 certain parts of the Burns & McDonnell report  
 18 that was attached, the letter. I have read the,  
 19 I think it was March 12th, 2018 letter from the  
 20 City and -- and at least certain aspects of the  
 21 Burns & McDonnell report.  
 22 Q. Do you understand that, from reading the  
 23 proposal, that one of the motivations in putting  
 24 it forward is that with the current relatively  
 25 full state of the aquifer, there's not room for

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1 the City to do physical recharge without pumping  
 2 the aquifer down first to accommodate that?  
 3 A. Yes, I do.  
 4 Q. And, Mr. Pope, would you agree with me that  
 5 under the existing ASR Phase I permits that you  
 6 approved, the City has the ability to pump the  
 7 aquifer down using its native rights and then  
 8 could recharge the hole, if you will, left in  
 9 the aquifer by that pumping and receive a credit  
 10 for that recharge?  
 11 A. Yes, I do understand that. I would note that  
 12 intuitively I think one would first think that's  
 13 a bad idea, but it's more complicated than that  
 14 in the broader sense, from my perspective. I  
 15 understand the City has a day-to-day operational  
 16 responsibility to deal with these issues. I  
 17 think it goes -- the reason I've testified as I  
 18 have today and in my report is that those  
 19 circumstances when the aquifer is full, if you  
 20 want to use that term, and there's no recharge  
 21 capacity, together with when water's available  
 22 for diversion from the Little Arkansas River,  
 23 tend to be -- those are not periods of shortage.  
 24 So it tends to be more water available in  
 25 relative terms. But yet if credit is given as

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1 proposed in your proposal, you're going to  
 2 withdraw those credits that wasn't based on  
 3 physical recharge during a drought, as  
 4 illustrated in the Burns & Mac report and the  
 5 table I referred to, and so you're taking a  
 6 period of plenty and transferring those credits  
 7 to a period of drought or shortage.  
 8 Q. And, Mr. Pope, do you not think the City's going  
 9 to do that exact same thing with the physical  
 10 recharge credits?  
 11 A. It seems to me like operationally there's lots  
 12 of factors involved in this, and, yes, I do  
 13 understand that, you know, you can -- the City  
 14 obviously has multiple sources, Cheney, you have  
 15 the well field, it -- this is not an  
 16 all-or-nothing proposal with regard to physical  
 17 recharge. I think it's a matter of degrees in  
 18 terms of what might -- if you want to look at a  
 19 comparison of those two, I'm trying to look at  
 20 the big picture of end result, if -- AMCs  
 21 compared to long-term drought, and I think  
 22 that's significant. The full aquifer conditions  
 23 where there's no recharge capacity versus some  
 24 lowering which allows some physical recharge is  
 25 an in between.

1 Q. Mr. Pope, your discussion of the existing  
2 physical recharge credit, in your discussion,  
3 you indicated your concept of the existing  
4 physical recharge credit is once the City has  
5 reduced that water to its possession, treated  
6 it, and injected it in the aquifer, the City  
7 essentially owns that water?

8 **A. As a practical matter, yes.**

9 Q. And so my question with respect to that,  
10 Mr. Pope, is that with the existing bottoms, the  
11 lower, the 1993 lower index levels, isn't it the  
12 case that when drought conditions persist and  
13 index levels go below the 1993 index levels,  
14 even though the City has physical recharge  
15 credits in the aquifer, which under your concept  
16 the City owns, the City would not be able to  
17 access that water to withdraw during the  
18 drought, correct?

19 **A. I think if the index levels are not lowered,  
20 then of course they would not have access to  
21 those recharge credits. I -- I didn't really  
22 opine in regard to that issue in my report, so  
23 it's not a part of this where I've analyzed the  
24 broader aspect of that explicit point. But I  
25 think it's a fair question to raise about the**

1 below those index levels. And the current  
2 question is doesn't that mean that other users  
3 in the aquifer are going to draw the City's  
4 water and they, rather than the City, will be  
5 able to use those -- those recharge credits  
6 through the drought?  
7 **A. I'm not sure it's quite that simple, but I would  
8 agree that holders of existing water rights to  
9 appropriate water in the area in question can  
10 exercise their water rights to the extent of  
11 Kansas water law. Whether or not that in and of  
12 itself causes the City to not be able to  
13 withdraw their credits is a slightly different  
14 analysis.**

15 **MR. MCLEOD:** I don't have further  
16 questions for the witness.

17 **PRESIDING OFFICER:** Mr. Oleen.

18  
19 **CROSS-EXAMINATION**

20 **BY MR. OLEEN:**

21 Q. Good afternoon, Mr. Pope.

22 **A. Good afternoon.**

23 Q. Sir, we heard your extensive experience involved  
24 in Kansas water administration as reflected in  
25 your resume, and you have significant experience

1 **index water levels being looked at carefully so  
2 that the recharge project can function, I think,  
3 as intended, in terms of being able to  
4 physically recharge water under the  
5 circumstances that were originally approved, at  
6 least, and -- and being able to access those  
7 credits. That water level, again, was I think  
8 the lowest point we had at that time, as I  
9 recall, and that is the point at which the index  
10 levels were established back when I was dealing  
11 with them.**

12 Q. So in the scenario that I have just described,  
13 would you agree with me that in that scenario,  
14 the existing 1993 low index levels would  
15 function to prevent the City drawing the credits  
16 that it had put in the aquifer and to  
17 effectively let other users in the aquifer draw  
18 the City's water during the persistence of that  
19 drought?

20 **A. I'm not sure I understand the difference between  
21 that question and the previous one.**

22 Q. So in the previous question, I was asking you if  
23 the 1993 levels would prevent the City drawing  
24 the credits, and I think you agreed with me that  
25 they would if the -- if the water levels were

1 and educational -- educational degrees, but you  
2 do not have a law degree, correct?

3 **A. That's correct.**

4 Q. And so you're not claiming here today, are you,  
5 that any particular legal significance should be  
6 given to the fact that you were the one who was  
7 the chief engineer at the time the Phase I  
8 approval and associated orders were issued; is  
9 that correct?

10 **MR. ROLFS:** Object.

11 **PRESIDING OFFICER:** Can you clarify  
12 your objection? I'm sorry, was that you  
13 Dave, I didn't see who said it?

14 **MR. STUCKY:** Well, I think -- I  
15 mean, the objection is this witness is  
16 testifying as to what these rules and  
17 regulations mean and what the importance of  
18 those rules and regulations mean. He's not  
19 testifying as far as what implications in  
20 general that means as far as whether or not  
21 his opinions -- I'll let Mr. Rolfs explain  
22 it. I guess I'm still being affected by  
23 some anesthesia here, I'll let Mr. Rolfs  
24 explain.

25 **PRESIDING OFFICER:** A valiant

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1 effort, though, I must say.  
 2 **MR. ROLFS:** Sorry, I've lost my  
 3 train of thought, could you repeat what you  
 4 were saying?  
 5 **MR. OLEEN:** The question, I believe,  
 6 was that I wanted to confirm whether  
 7 Mr. Pope was claiming that any particular  
 8 legal significance should be given to the  
 9 fact that he was the former chief engineer  
 10 who actually signed and issued the Phase I  
 11 approval and associated Phase I orders?  
 12 **MR. ROLFS:** Well, I think he clearly  
 13 testified that he was the one that created  
 14 this program, created the -- or made the  
 15 original approval of Phase I, and that  
 16 certainly has legal significance, and I  
 17 think that's entirely appropriate. Are you  
 18 saying you -- are you trying to take it  
 19 beyond that?  
 20 **MR. OLEEN:** Well, I am -- I don't  
 21 personally think, and it's a matter perhaps  
 22 that the attorneys put in some subsequent  
 23 briefing, I don't think the fact that we  
 24 have a former chief engineer testifying  
 25 here today about orders that are still in

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1 force, I don't think that there's  
 2 particular legal significance due to the  
 3 fact that we have him in the room  
 4 testifying, the person who issued those  
 5 orders, because he's no longer acting --  
 6 he's not testifying in the capacity in  
 7 which he issued these orders previously.  
 8 That's my --  
 9 **MR. ROLFS:** He's clearly not  
 10 testifying that he's the current chief  
 11 engineer here; he's testifying as to what  
 12 he did at that time and the legal  
 13 significance at that time.  
 14 **MR. OLEEN:** Well, then he can give  
 15 that answer, I would say.  
 16 **PRESIDING OFFICER:** Well, that's  
 17 what I thought was taking place. So,  
 18 Mr. Pope, you're testifying --  
 19 **A. My testimony, and I believe Mr. Rolfs stated it**  
 20 **correctly, is simply based on what I did at the**  
 21 **time as chief engineer and my understanding of**  
 22 **the rules that I adopted when I was chief**  
 23 **engineer. I'm not suggesting anything different**  
 24 **for the current chief engineer. I'm simply, I**  
 25 **guess, offering what the thought process was and**

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1 **my understanding of why these rules were adopted**  
 2 **and what they were -- how they related to the**  
 3 **ASR program, Phases I and -- particularly Phase**  
 4 **I but to some extent into II.**  
 5 **BY MR. OLEEN:**  
 6 Q. Okay. And maybe you, as part of that  
 7 explanation, also answered my next question, but  
 8 you're not claiming any particular legal  
 9 significance as it pertains to the ASR  
 10 regulations that we have discussed and the  
 11 regulations that you testified you were involved  
 12 in the enactment of them, you're not claiming  
 13 that there's particular legal significance by  
 14 virtue of the fact that you were, in your  
 15 previous capacity, involved in the creation of  
 16 them?  
 17 **MR. ROLFS:** Object, I'm not quite  
 18 sure --  
 19 **PRESIDING OFFICER:** I -- I'm going  
 20 to step in on this one.  
 21 **MR. ROLFS:** -- the point of this  
 22 objection.  
 23 **PRESIDING OFFICER:** As has been  
 24 discussed previously with motions and my  
 25 resolution of those motions, with

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1 Mr. Pope's previous role as chief engineer,  
 2 which is what he's testifying about, it is  
 3 impossible to extricate facts and legal  
 4 applications and conclusions and  
 5 interpretations. That was an integral part  
 6 of his job.  
 7 And so to the extent that he is  
 8 describing what the thought processes were,  
 9 what took place, what he was involved with  
 10 and what he knows from that experience, it  
 11 is a mix of fact and law. And I find them  
 12 both relevant, and I don't believe that  
 13 there is any risk of legal confusion on my  
 14 part.  
 15 So I'm going to overrule your objections  
 16 because I think they go to the heart of  
 17 what Mr. Pope is trying to say today. And  
 18 I find that, as I said, his -- his role is  
 19 necessarily a mixed one of fact and law in  
 20 his testimony. And trying to parse out  
 21 what he might believe is legally  
 22 significant is not his role anyway, that's  
 23 mine. So I think we should move on.  
 24 **MR. OLEEN:** I didn't mean to suggest  
 25 that Mr. Pope could not opine about his

1 interpretations of these legal matters,  
2 that has been done by many other witnesses  
3 already. I guess I was getting at I want  
4 it to be clear whether he thinks that as a  
5 matter of law his -- his testimony is to be  
6 given particular legally persuasive  
7 authority above and beyond factual  
8 testimony?

9 **PRESIDING OFFICER:** And I think  
10 that's a question for me.

11 **MR. STUCKY:** Yeah, objection, it's  
12 been answered in the motions in limine,  
13 it's argumentative, it calls for legal  
14 conclusions, and as to relevance, all four  
15 objections lodged for the record.

16 **PRESIDING OFFICER:** So the level of  
17 legal significance to grant it is mine, not  
18 Mr. Pope's.

19 **MR. OLEEN:** Okay, thank you. And to  
20 be clear, multiple counsel will be making  
21 objections from GMD2's table henceforth,  
22 Mr. Stucky and Mr. Rolfs and Mr. Adrian as  
23 well?

24 **PRESIDING OFFICER:** I'm sorry, what?

25 **MR. OLEEN:** All attorneys at the

1 concerning, and I quote, after a vested right  
2 has been determined or the time allowed in which  
3 to perfect the water right has expired,  
4 including any authorized extension of time to  
5 perfect the water right? Is that correct?

6 **A. That's correct.**

7 Q. And the ASR water rights that are authorized to  
8 accumulate and withdraw recharge credits, is it  
9 your understanding as to whether or not those  
10 have yet been perfected?

11 **A. I didn't look into the individual status of  
12 those particular water rights, so this was more  
13 of a generic description of a concern that I  
14 wanted to bring to the attention of the  
15 presiding officer.**

16 Q. Would you agree with me that K.A.R. 5-5-3, to  
17 the extent it includes some sort of prohibition  
18 concerning consumptive use, that that only  
19 applies to vested rights or water rights that  
20 have been perfected?

21 **A. Yes, I think that's a fair interpretation.**

22 Q. Turning to some other definitions and  
23 regulations, if you would turn to, please,  
24 5-1-1, subsection (mmm), which is a definition  
25 of a recharge credit.

1 table will be authorized to be making  
2 objections? Never mind, I'll move on,  
3 Ms. Owen. He said he had some problems  
4 with some medications, so I didn't know if  
5 that -- maybe his team doesn't want him to  
6 be allowed to object.

7 **MR. STUCKY:** You have to give me  
8 credit, I gave four valid objections in a  
9 row, give me some credit here. I saved a  
10 little face.

11 **MR. OLEEN:** Okay. I will move on.

12 **BY MR. OLEEN:**

13 Q. Mr. Pope, I will direct your attention to K.A.R.  
14 5-5-3, in what I think has been labeled GMD  
15 Exhibit 22 perhaps. It is the regulation that  
16 you previously discussed regarding change in  
17 consumptive use.

18 **A. Yes. Yes.**

19 Q. Okay. Mr. McLeod had asked you some questions  
20 regarding the phrase increased substantially in  
21 that regulation, but I want to direct your  
22 attention to a subsequent clause. Isn't it true  
23 that this K.A.R. 5-5-3, to the extent it is  
24 prohibiting the substantial increase of  
25 consumptive use, that applies to -- or is

1 **A. Okay.**

2 Q. Before we get into some regulatory analysis,  
3 Mr. Pope, would it be fair to say that  
4 throughout your report, or at least your  
5 testimony today, it's your position that  
6 recharge credits can only be lawfully  
7 accumulated if water is physically put into the  
8 basin storage area of the ASR system?

9 **A. I think that's generally consistent with the  
10 thrust of my testimony, yes. Under the current  
11 law and rules.**

12 Q. Well, and now let's turn to some of those  
13 current laws and rules. And if you would please  
14 look at that definition of a recharge credit in  
15 5-1-1(mmm), there's no phrase physical injection  
16 or physically put. There's nothing in there  
17 that uses the word physical, is there?

18 **A. There is not that I see in the definition of  
19 recharge credit in and of by itself. I think  
20 you have to look at the -- all the definitions.**

21 Q. And let's look at some of those other  
22 definitions. If you would please turn to 5-1-1,  
23 subsection (e). I believe earlier in your  
24 testimony you started by reciting subsection  
25 (e), and you went on to mention subsections (f)

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1 and (g). And my question to you, and I believe  
 2 these are -- some of these that I just recited  
 3 are also listed in your expert report on page 10  
 4 where you list some ASR regulations. But my  
 5 question to you is in those subsections (e),  
 6 (f), and (g) of 5-1-1, can you agree with me  
 7 that there is never the phrase physically inject  
 8 or physically put in the context of referring to  
 9 water in the ASR concept?  
 10 **A. No, I think it's there.**  
 11 Q. Okay.  
 12 **A. Maybe not those -- your exact phraseology of**  
 13 **those words, but I think it's very clear in**  
 14 **regard to these definitions. For example, item**  
 15 **(g), artificial recharge means the use of source**  
 16 **water to artificially replenish the water supply**  
 17 **in the aquifer; or aquifer storage means the act**  
 18 **of storing water in an aquifer by artificial**  
 19 **recharge for subsequent diversion and beneficial**  
 20 **use. You can go through each one of these,**  
 21 **including the definition of source water, as**  
 22 **well as the -- you know, (f)(1) is, is**  
 23 **constructed and operated for artificial**  
 24 **recharge, again as defined, storage, and**  
 25 **recovery of source water. Those seem very clear**

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1 **to me.**  
 2 Q. Notwithstanding how clear they may seem to you,  
 3 can you agree with me that there is never the  
 4 word -- or the phrase physical injection or  
 5 physically put in any of those regulations?  
 6 **A. You're using terms that are not used in the**  
 7 **rules. If you use the proper terms, it's clear.**  
 8 **Physical injection -- the rules speak in terms**  
 9 **of artificial recharge, and it's defined. The**  
 10 **rules speak in terms of source water, and it's**  
 11 **defined. The rules speak in terms of, you know,**  
 12 **these other definitions that we've talked**  
 13 **about -- I won't go on at this point in time,**  
 14 **but I don't agree with your characterization is**  
 15 **my point.**  
 16 Q. Well, Mr. Pope, I understand that we may  
 17 disagree about legal interpretations, but yes or  
 18 no, at least, is the words physically injected  
 19 or physically put in any of these regulations  
 20 that I have listed or that you have referenced?  
 21 **A. I will agree that the term you have used,**  
 22 **physical injection, I do not see those -- that**  
 23 **term in the rules.**  
 24 Q. Thank you.  
 25 **MR. OLEEN:** Permission to approach

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1 the witness, please.  
 2 **PRESIDING OFFICER:** Okay.  
 3 **BY MR. OLEEN:**  
 4 Q. Mr. Pope, I'm handing you what I will submit to  
 5 you is a printout from a definition from  
 6 Merriam-Webster online, and I could pull it up  
 7 on my phone, sir, or with Madam Hearing  
 8 Officer's permission, you could pull it up on  
 9 your phone, we've looked at some phones here  
 10 during this hearing, but I would ask if you  
 11 agree with me whether this appears to be a  
 12 definition of the transitive verb store, at  
 13 least as it is defined by Merriam-Webster  
 14 online?  
 15 **MR. STUCKY:** Madam Hearing Officer,  
 16 I was going to object to this definition,  
 17 but now having read it, I withdraw my  
 18 objection because I see it's actually going  
 19 to help us.  
 20 **MR. OLEEN:** Mr. Stucky's been  
 21 through a lot, so he could use some help.  
 22 **BY MR. OLEEN:**  
 23 Q. Sir, do you agree that that purports to be an  
 24 online definition of the transitive verb store,  
 25 at least as it is defined by Merriam-Webster

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1 online as of March 3rd, 2020?  
 2 **A. And you're referring to this upper part where it**  
 3 **says transitive verb?**  
 4 Q. Yes, sir. And in a minute I'm about -- I'm  
 5 going to ask you to read one of those  
 6 definitions, but I just wondered if you would  
 7 agree with me whether this appears to be a  
 8 definition as provided by this source?  
 9 **A. I mean, in general terms, I -- I understand the**  
 10 **way it's being used here in this example. You**  
 11 **know, down below under definition of store, 1a**  
 12 **says, something that is stored or kept for**  
 13 **future use. I --**  
 14 Q. Okay.  
 15 **A. That's a common -- my common understanding of**  
 16 **that, as well as how it's really used in these**  
 17 **rules.**  
 18 Q. Yes, sir. Well, actually there -- there are at  
 19 least three definitions contained on this page,  
 20 I'll submit to you. One it says a definition  
 21 for the transitive verb, one it says definitions  
 22 for the noun, and then one it says definitions  
 23 for the adjective. And what I would like you to  
 24 do is please read the definition number 3 in the  
 25 first set of definitions for the transitive

1 verb.

2 **A. In the transitive verb portion of this document,**  
3 **number 3 says, to place or leave in a location,**  
4 **parentheses, such as a warehouse, library, or**  
5 **computer memory, closed parentheses, for**  
6 **preservation or later use or disposal.**

7 Q. Thank you, sir. Turning now to the Phase I  
8 approval that I believe has been admitted as GMD  
9 Exhibit 26.

10 **A. Okay.**

11 Q. Are you aware, sir, that regarding the concept  
12 of AMCs -- before I direct you to a particular  
13 portion of that Exhibit 26, are you aware that  
14 in the proposal, Wichita characterizes the  
15 concept of AMCs as an accounting concept? Are  
16 you aware of that?

17 **A. I think in general terms, yes.**

18 Q. And are you aware whether that is currently the  
19 position of DWR as well?

20 **A. Just in very general terms. I have not, you**  
21 **know, probably read every brief or every**  
22 **document, you know, but -- well, go ahead with**  
23 **your question, I guess.**

24 Q. Well, I guess I will direct your attention to  
25 page 15 of 21 of that Exhibit 26.

1 **would not be.**

2 Q. But if -- if it were and if it also constituted  
3 accounting methodology, do you believe that this  
4 paragraph 5 in the Phase I approval, which I'll  
5 submit to you is repeated verbatim in the Phase  
6 II approval, would you agree with me then that  
7 it would be appropriate for the chief engineer  
8 to modify that accounting methodology?

9 **A. I think it's within the authority of the chief**  
10 **engineer to modify accounting, but, again, I**  
11 **don't believe one can take that out of context**  
12 **and say you can ignore everything else in the**  
13 **rules related to the criteria for ASR. It's**  
14 **just not an accounting issue here. You can't**  
15 **just say, AMCs, hey, we got a proposal here,**  
16 **let's change the accounting. That is very**  
17 **inconsistent with the Phase I and Phase II**  
18 **orders.**

19 Q. Thank you, sir, I understand that's your  
20 opinion. Your -- I believe you already  
21 mentioned this, sir, but you didn't do any  
22 modeling work as part of your -- as part of the  
23 reasons for which you were hired for your  
24 expertise for this matter, correct?

25 **A. That's correct.**

1 **A. Okay.**

2 Q. And I'd like to direct your attention to  
3 paragraph 5 and ask you to read that, please.

4 **A. On page 15 of 21 of this document, number 5**  
5 **says, that the model and accounting methodology**  
6 **is approved as submitted, until otherwise**  
7 **modified by formal written approval of the chief**  
8 **engineer.**

9 Q. Thank you. So would you agree with me that to  
10 the extent something constitutes accounting  
11 methodology, to that extent, the chief engineer  
12 has authority under this paragraph 5 of the  
13 order that you issued at the time when you were  
14 chief engineer, that an acting chief engineer  
15 would have authority to modify the -- well, let  
16 me rephrase. Wouldn't you agree with me that  
17 given that paragraph 5 that you just read, the  
18 current chief engineer would have the authority  
19 to modify accounting methodology of the ASR  
20 order to the extent something constitutes  
21 accounting methodology?

22 **A. I think your question's out of context. I would**  
23 **say only to the extent that the underlying**  
24 **process that you're speaking of is consistent**  
25 **with the adopted rules and regulations. And it**

1 Q. And I don't recall how long you may have been  
2 witnessing these proceedings, sir, but because  
3 you haven't done any modeling work and I think  
4 you said you focused on the AMC portion of the  
5 City's proposal, you're not prepared to give  
6 expert opinion as to the other aspect of the  
7 City's proposal, which is lowering the minimum  
8 index levels?

9 **A. That's not an issue -- I certainly have in my**  
10 **report and am aware of the proposed changes that**  
11 **include lowering the index levels, but I was not**  
12 **retained in order to do modeling work or**  
13 **assessment of impacts, for example, of that.**

14 Q. So if you turn to your expert report, page 11,  
15 when you refer in item 6, and I quote, the  
16 Wichita ASR proposal should not be approved in  
17 its current form, is it fair to say that that  
18 recommendation is limited to the concept of  
19 AMCs?

20 **A. Well, I think this statement is accurate in its**  
21 **current form.**

22 **MR. STUCKY:** I'm going to object,  
23 the question misstates the witness's  
24 testimony. He testified both to the  
25 effects of minimum index levels and to

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1 AMCs. He testified as to both concepts in  
 2 the City's proposal already, and so to that  
 3 extent it's asked and answered. And I'm  
 4 also objecting to the extent it misstates  
 5 the witness's testimony.  
 6 **MR. OLEEN:** I asked the witness to  
 7 read a line, and I believe he also just  
 8 told me that he's not retained, did not  
 9 have an expert opinion on the first of the  
 10 two components of the City's proposal. I  
 11 don't understand Mr. Stucky's objection.  
 12 **PRESIDING OFFICER:** Well, and  
 13 perhaps I don't understand the distinctions  
 14 because I thought Mr. Pope said that he  
 15 wasn't hired to do modeling on the lower  
 16 index levels.  
 17 **MR. OLEEN:** Okay.  
 18 **A. That's correct.**  
 19 **BY MR. OLEEN:**  
 20 Q. And me understanding that, now having that  
 21 confirmed, I'm asking for confirmation of  
 22 whether in number 6 of his report, he's  
 23 limiting -- he would agree with me that he  
 24 limits his recommendation of disapproval to the  
 25 concept of AMCs?

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1 **A. Well, item 6 there simply says the proposal**  
 2 **should not be approved in its current form. It**  
 3 **does not distinguish this particular item in**  
 4 **that level of detail. I've already testified in**  
 5 **regard to the modeling aspect that I've not**  
 6 **looked at, and I think I did make some comments**  
 7 **in earlier testimony that the question of index**  
 8 **levels is -- is one that -- well, I won't try to**  
 9 **restate what I said, but I did -- I did testify**  
 10 **to some degree about that issue.**  
 11 Q. Sir, I'm not -- I'm not trying to trick you or  
 12 be difficult, let me see if I can ask it in a  
 13 different way. If the current form of the  
 14 proposal did not include AMCs but only included  
 15 a request to have the lowering of the minimum  
 16 index levels, you would not have a  
 17 recommendation one way or the other based on the  
 18 extent of the review that you told me you have  
 19 conducted?  
 20 **A. Well, I've provided some testimony regarding --**  
 21 **in response to questions about index levels. I**  
 22 **would agree that my -- the thrust of my expert**  
 23 **report is largely about response to AMCs and**  
 24 **physical recharge of source water and the like.**  
 25 **I -- I just really don't feel that I have --**

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1 **would want to take it further in regard to this**  
 2 **more complicated -- this additional other issue**  
 3 **of index levels because I've not been involved,**  
 4 **again, in the modeling and the studies that have**  
 5 **been done regarding that.**  
 6 Q. Thank you. I'll ask you to think back to the  
 7 Phase I formulation, back in those years when  
 8 Phase I was being contemplated. There was a  
 9 discussion, Mr. Rolfs had asked you some  
 10 questions about when passive recharge credits  
 11 were first proposed in the context of Phase I --  
 12 **A. Yes.**  
 13 Q. -- it was that line of questioning. Do you  
 14 recall, sir, at the time that that said  
 15 discussion of passive recharge credits was being  
 16 discussed, do you recall what water the City at  
 17 that time was proposing would be used for the  
 18 accumulation of what was eventually called  
 19 passive recharge credits?  
 20 **A. I'm not sure I understand the question, but if**  
 21 **it is -- I do recall, and I think there's some**  
 22 **reference in obviously these documents, but**  
 23 **Phase I of the artificial recharge project**  
 24 **involved originally a series of bank storage**  
 25 **wells from the Little Arkansas River. That was**

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1 **modified to include a surface diversion and a**  
 2 **different mix of bank storage wells. And that**  
 3 **water again, then, was transported to -- to the**  
 4 **recharge facilities for treatment and artificial**  
 5 **recharge.**  
 6 **I'm not sure whether I fully understood**  
 7 **your question, but that's the nature of the**  
 8 **facilities. There was, you know, some -- some**  
 9 **pits that were involved, I think, for recharge**  
 10 **facilities, as well as recharge wells. I toured**  
 11 **the facilities, as I recall, back in that era, I**  
 12 **don't remember exactly when, so ...**  
 13 Q. Thank you, I'll ask -- I'll ask another question  
 14 that may refresh your recollection, may not. Do  
 15 you recall, was the concept of using water from  
 16 Cheney Reservoir ever a part of the discussion  
 17 about what then or later was referred to as  
 18 passive recharge credits?  
 19 **A. Not to my knowledge. I certainly am aware in**  
 20 **general terms of Cheney being one of the**  
 21 **components of the City of Wichita water supply.**  
 22 Q. And -- and you don't recall it ever being  
 23 proposed to use water -- diversions from Cheney  
 24 as water which would form the basis for some  
 25 sort of in lieu of credit or passive recharge



1 credit or something along those lines?  
2 **A. Not in the context of passive recharge credits.**  
3 **Certainly aware of the fact that there's the**  
4 **Cheney Reservoir source, there's the Equus Beds**  
5 **well field, there's artificial recharge. And,**  
6 **you know -- you know, I understand that the City**  
7 **as it manages its sources of water considers how**  
8 **to make decisions about which source to use at**  
9 **any given time.**

10 Q. Thank you. Do you have an opinion, and I think  
11 maybe you were asked this question or maybe you  
12 came close to answering it, so I apologize if  
13 I'm asking you to repeat yourself, but do you  
14 have an opinion of whether it is preferable in  
15 terms of water quantity and quality of the Equus  
16 Beds Aquifer to pump down high water levels in  
17 order to physically recharge that space and  
18 accumulate physical recharge credits, which are  
19 currently allowed, or is it preferable to keep  
20 the water generally more full and not pump down  
21 and refill and pump down and refill in order to  
22 accumulate physical recharge credits but to  
23 instead allow this concept of AMCs?

24 **MR. ROLFS:** Object, I need  
25 clarification here, are you talking -- you

1 are you aware that they claim that they have  
2 looked at different options?  
3 **A. I'm not aware of the detail of that. I have --**  
4 **I have some general knowledge just from hearing**  
5 **presentations from the City at conferences, and**  
6 **I think Joe Pajor had referred to some of the**  
7 **alternatives that had been considered in his**  
8 **report. I didn't hear his testimony, per se.**  
9 **So in a general sense, I know the City has been,**  
10 **for a number of years, has had water planning**  
11 **efforts and water supply alternatives**  
12 **considered.**

13 Q. And I'm not going to ask you to agree with me  
14 that the City only has two options, but what I  
15 want to know is if, as I think the City has  
16 stated, there are two most feasible options to  
17 achieve their long-term drought planning goals,  
18 one of which is pump down the current full state  
19 of the aquifer in order to create space in it in  
20 which to physically inject recharge credits  
21 under the current ASR system or not pump down  
22 the aquifer and leave it at higher levels and  
23 instead be allowed to accumulate this concept of  
24 AMCs that they have proposed, if those are the  
25 two options, assuming that Wichita is correct

1 say better or something like that, in what  
2 respect?  
3 **MR. OLEEN:** And I said in terms of  
4 aquifer quantity and quality.  
5 **MR. ROLFS:** Well, I object, Mr. Pope  
6 never testified anything about quality.  
7 **MR. OLEEN:** If he doesn't have an  
8 opinion on quality and tells me that, then  
9 I'll take quality out of the equation.

10 **A. No, I -- I don't have a view in regard to water**  
11 **quality. The -- I think my testimony and my**  
12 **report provide about all I can say in regard to**  
13 **the rest of your question. I think I've already**  
14 **addressed that in the context of assessing the**  
15 **rules and regulations and what they provide for**  
16 **and how the physical recharge process is**  
17 **outlined in the rules. I -- I don't know what**  
18 **to say beyond that to your question, I think**  
19 **I've already covered that.**

20 **BY MR. OLEEN:**  
21 Q. Well, let me try again, see if I can do better.  
22 I don't know, are you aware that Wichita has --  
23 Wichita officials have testified that they have  
24 looked at various options to provide proper  
25 drought planning as they think they should plan,

1 that those are the only two options, which do  
2 you believe is preferable?  
3 **A. I think my testimony was geared to providing**  
4 **background about the statutes and the rules and**  
5 **regulations and the history of how Phases I and**  
6 **II have evolved, and I believe it's not just a**  
7 **question of me in abstract trying to do water**  
8 **planning for the City of Wichita but focusing on**  
9 **the law and on the rules. And I believe under**  
10 **that circumstance, the current rules opt for,**  
11 **they allow for the physical recharge of water,**  
12 **source water into the aquifer and do not allow**  
13 **AMCs.**

14 **I'm not suggesting that rules can't ever be**  
15 **changed. I'm just saying I believe that's what**  
16 **they say and what they mean. So I don't want to**  
17 **answer this in a context of trying to give the**  
18 **City advice in terms of their water planning.**  
19 **That's not my purpose here.**

20 Q. And I'm not asking you to give advice. I'm just  
21 saying that -- I guess do I understand your  
22 testimony, then, if those are the only two  
23 options that Wichita makes -- says there are,  
24 and you don't have to agree with me that those  
25 are the only two, but if those are the only two,

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1 you have said that you believe AMCs are not  
 2 allowed under the law, so that would leave one  
 3 other -- that would leave one remaining option  
 4 between the two that I have presented?  
 5 **A. That -- that would be my view. I just -- I just**  
 6 **don't see -- you know, separate and apart from**  
 7 **pro and cons that might otherwise be considered,**  
 8 **I don't see it as being in compliance with the**  
 9 **law and the rules.**  
 10 Q. And just to be clear, when you say it, you're  
 11 referring to?  
 12 **A. AMCs.**  
 13 **MR. OLEEN:** No further questions.  
 14 Thank you, sir.  
 15 **PRESIDING OFFICER:** Ms. Wendling.  
 16  
 17 **CROSS-EXAMINATION**  
 18 **BY MS. WENDLING:**  
 19 Q. Mr. Pope, as chief engineer, you were involved  
 20 in issuing orders regarding new and change  
 21 applications; is that correct?  
 22 **A. I'm sorry, can you --**  
 23 Q. Did you -- as chief engineer, were you issuing  
 24 orders regarding new and/or change applications?  
 25 **A. Yes.**

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1 Q. In your role, did you have the opportunity to  
 2 determine whether an applicant's use was a  
 3 beneficial use?  
 4 **A. Yes, part of the determination in terms of**  
 5 **whether to approve an application was looking at**  
 6 **the beneficial use of the water, whether it was**  
 7 **beneficial, whether it complied with the law and**  
 8 **the rules.**  
 9 Q. And are you familiar with the list of items that  
 10 constitute a beneficial use?  
 11 **A. Yes, you're referring to the types of uses?**  
 12 Q. Yes. K.A.R. 5-1-1(o), Exhibit 22.  
 13 **A. Let me go to 22 just so I'll have it in front of**  
 14 **me. Can you give me a specific --**  
 15 Q. I believe in the definition side 5-1-1 --  
 16 **A. Oh, in the definitions, okay.**  
 17 Q. -- (o) and the definition of beneficial use.  
 18 **A. Yes.**  
 19 Q. Okay.  
 20 **A. I'm sorry.**  
 21 Q. Oh, that's okay.  
 22 **A. I was reading right over the other one.**  
 23 Q. Is artificial recharge listed as a beneficial  
 24 use?  
 25 **A. Yes.**

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1 Q. Is storage listed as a beneficial use?  
 2 **A. No, I don't believe so.**  
 3 Q. Is nonuse listed as a beneficial use?  
 4 **A. No.**  
 5 Q. Now can I have you turn to Exhibit 21 in this  
 6 same binder, can you find K.S.A. 82a-707(e)?  
 7 **A. Let's see, you're -- you're referring to the law**  
 8 **now, right?**  
 9 Q. Yes. It should be just in front of the --  
 10 **A. Yeah. For some reason, I was looking at the**  
 11 **rules, just a second. Okay, 707?**  
 12 Q. Yes. Can you read 707(e) for us?  
 13 **A. Yes. Appropriation rights in excess of the**  
 14 **reasonable needs of the appropriators shall not**  
 15 **be allowed.**  
 16 Q. Can you recall how you might have applied that  
 17 during your role as chief engineer?  
 18 **A. I'm going to give two circumstances where that**  
 19 **was applied while I was chief engineer. The**  
 20 **first of those is sort of the more traditional**  
 21 **determination at the time an application, a new**  
 22 **application for a permit to appropriate water**  
 23 **was being considered. And there are rules and**  
 24 **regulations and various determinations made to**  
 25 **look at the -- the application and how much**

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1 **water is proposed to be used, and then that**  
 2 **would be compared to the rules and, of course,**  
 3 **professional judgment based on facts.**  
 4 **And the -- for example, in the case of**  
 5 **irrigation, historically, the procedure with the**  
 6 **Division was to allow 1 acre-foot per acre in**  
 7 **the eastern part of the state, 1 1/2 in the**  
 8 **central part of the state, and 2 acre-foot per**  
 9 **acre for each irrigated acre, determined to be a**  
 10 **reasonable amount. Other processes were used**  
 11 **for municipal use in terms of looking at**  
 12 **population and projected growth over a period of**  
 13 **time and all kinds of other things that come**  
 14 **into play, like conservation plans and whatnot.**  
 15 **So that's the first traditional use of -- of the**  
 16 **term reasonable needs of the appropriator.**  
 17 **In a more complex and more recent sense,**  
 18 **and I don't know whether this is relevant to**  
 19 **this particular -- to your question, but when**  
 20 **shortages of water exist, oftentimes there is**  
 21 **then action needed by the Division of Water**  
 22 **Resources to deal with that shortage of water.**  
 23 **If senior water rights are being impaired or if**  
 24 **there's a broader, more regional problem,**  
 25 **there's various tools available to deal with**

1 that.

2 I'll cite as an example that when we had a

3 complaint and a shortage of water to meet all

4 needs in the Walnut Creek area back in the late

5 '80s, early '90s, that led to consideration of

6 establishing an Intensive Groundwater Use

7 Control Area. And that resulted in some pretty

8 significant regulation in terms of water. And

9 in that particular example restrictions on how

10 much water could be diverted in the IGUCA, the

11 acronym for that, were based on a combination of

12 priority date for the water right, and,

13 secondly, because of the nature of the severe

14 reductions, I also, I think for the first time,

15 applied the term reasonable use when determining

16 allocations for how much water could be diverted

17 by the various rights in the priority scheme.

18 The idea was to prevent waste and to require the

19 most efficient use as possible, recognizing that

20 severe reductions were being required by the

21 most junior water rights, and some seniors down

22 through the pecking order.

23 I don't know whether I've gone beyond your

24 question or not, but if you apply that

25 rationale, that's how we did it at least then

1 and in some other cases.

2 Q. So speaking about waste and the waste of

3 water --

4 A. Yes.

5 Q. -- what would be your opinion of having water

6 spill out from Cheney Reservoir while pumping

7 from the Equus Beds, would that be considered a

8 waste of water in your experience?

9 A. It's probably not. The -- you'd have to be fact

10 specific --

11 Q. Okay.

12 A. -- in terms of, you know, any given set of

13 circumstances. But if a user has multiple

14 sources and it happens to be that a high runoff

15 event results in a spill of water from one of

16 those sources, in this case Cheney, does not

17 necessarily mean that it's waste to exercise

18 their other water rights as long as they're

19 within the terms and conditions of the water

20 right.

21 I mean, in a -- I want to be a little

22 careful about making judgments, you know, based

23 on a hypothetical because I don't know all the

24 circumstances involved of what can be physically

25 operated and things like that under those

1 particular conditions. But I think in general,

2 obviously we sought to achieve as efficient a

3 water use as we could and people making good

4 choices in terms of how they used their water

5 and how they compared those.

6 Q. Okay. Are you familiar with a concept of an

7 unsaturated zone within an aquifer?

8 A. I'm aware of the term, yes.

9 Q. Would you be able to describe what the

10 unsaturated zone is?

11 A. Well, in a -- at least in a generic situation, I

12 think of it as the -- you have your aquifer,

13 which is bounded on the top by the water level,

14 and the bottom typically is bedrock or some

15 zone, the bottom of a certain zone, wherever

16 that well happens to be completed to. And there

17 can be, you know - I hope I'm understanding your

18 question right here - there can be -- I'm aware

19 of situations where water level declines have

20 occurred or during dry periods, you know, you

21 have lowering of the water level because of the

22 pumping effects and you end up with a portion of

23 the aquifer that is unsaturated.

24 Q. All right.

25 MS. WENDLING: May I approach the

1 witness?

2 PRESIDING OFFICER: Yes.

3 BY MS. WENDLING:

4 Q. Mr. Pope, I realize you may have never seen this

5 before, can you briefly look at it and tell me

6 what you believe it to be?

7 A. Well, at first glance here, of course, this is a

8 certificate -- a certificate of adoption of

9 certain rules and regulations that were

10 promulgated, either in terms of amendments or

11 new, by Chief Engineer David Barfield in 2016.

12 And it includes the, you know, impact statement

13 and then the actual text of the rules. In this

14 case, one of those is amendments to the

15 definitions, K.A.R. 5-1-1, and then I think the

16 other one goes to K.A.R. 5-12-1. So that's the

17 content in general.

18 Q. Okay. And as you flip through the pages, if you

19 go to the end, you'll see that all of the

20 changes attached to this are actually for 5-1-1?

21 A. Yes.

22 Q. 5-12-1 is not attached, would you agree with

23 that?

24 A. Oh, okay, yeah, I was flipping through that, I

25 hadn't gotten to that yet. So I agree, it looks

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1 like it's the definitions.  
 2 Q. In your role as chief engineer when you were  
 3 making regulatory changes, is this the type of  
 4 document you would have prepared, or had  
 5 prepared?  
 6 **A. Yes, this or something very analogous to it.**  
 7 **There was -- there was an actual formal adoption**  
 8 **of the rules, and I depended on Mr. Rolfs and**  
 9 **others to prepare that part of the submittal.**  
 10 Q. Okay. If you turn to, I believe the third page,  
 11 do you see a regulation 5-1 -- or, sorry, 5-1-1?  
 12 **A. 5-1-1 and which letter?**  
 13 Q. Can you flip to letter (k) for the definition of  
 14 basin storage area?  
 15 **A. Yes.**  
 16 Q. And in looking at this, can you tell what the  
 17 proposed change was to the definition of basin  
 18 storage area?  
 19 **A. Yes, give me a minute. Well, my --**  
 20 Q. And I can rephrase my question. Can you tell  
 21 how the definition of basin storage area was  
 22 changed with regard to the unsaturated zone?  
 23 **A. Well, in essence, of course the term aquifer's**  
 24 **unsaturated zone is -- has been stricken and**  
 25 **they set -- he substituted just the term**

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1 **aquifer. So the basin storage area now would**  
 2 **mean the portion of the aquifer used for aquifer**  
 3 **storage, et cetera, et cetera. And the second**  
 4 **change is instead of saying the highest and the**  
 5 **lowest index level, that then became a maximum**  
 6 **index level and a minimum index level.**  
 7 Q. And can you tell from these documents when this  
 8 change was filed or approved by the Department  
 9 of Administration? There are several stamps.  
 10 **A. Well, the stamps for the Office of the Attorney**  
 11 **General was October 19th, 2015 and for**  
 12 **Department of Administration September 29 of**  
 13 **2015.**  
 14 Q. Would you -- do you believe that this change was  
 15 made after the approval of Phase I?  
 16 **A. It would have been after the approval of Phase**  
 17 **I, that's correct.**  
 18 Q. And so when you approved Phase I, did the  
 19 definition of basin storage area include the  
 20 unsaturated zone language?  
 21 **A. It would have, yes.**  
 22 **MS. WENDLING:** Madam Hearing  
 23 Officer, I'm unclear from the judicial  
 24 notice of regulations if it includes the  
 25 historical versions or only the current

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1 versions?  
 2 **PRESIDING OFFICER:** Actually, I  
 3 didn't contemplate the historical versions,  
 4 so are you requesting that?  
 5 **MS. WENDLING:** Well, I would either  
 6 like to admit this to reflect the change or  
 7 take notice of the historical version.  
 8 **PRESIDING OFFICER:** Any comment on  
 9 that?  
 10 **MR. MCLEOD:** Relevance?  
 11 **MS. WENDLING:** I believe the rules  
 12 in place at the time ASR Phase I was  
 13 approved and Phase II was approved is very  
 14 relevant to this matter directly because  
 15 we're continuing the ASR program and making  
 16 modifications to the ASR program, and so I  
 17 think the rules and regulations in place at  
 18 the time it was approved are relevant.  
 19 **PRESIDING OFFICER:** Okay. I would  
 20 agree, I find them relevant. Just because  
 21 it's harder to access historical versions,  
 22 I'd like to admit this as a separate  
 23 document. So we'll have to come up with  
 24 your numbering for that.  
 25 **MS. WENDLING:** I have 23,

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1 Intervenor's 23, if there's no objection to  
 2 using that.  
 3 **PRESIDING OFFICER:** So this would be  
 4 Intervenor's 23?  
 5 **MS. WENDLING:** Yes.  
 6 **PRESIDING OFFICER:** Okay  
 7 Intervenor's 23 is admitted.  
 8 **MR. OLEEN:** I guess if I may, I --  
 9 how do we know that this is -- there's  
 10 several -- if you look at the end,  
 11 obviously there was several iterations of  
 12 this regulation, one of which was amended  
 13 on October 31, 2008, prior to this, which  
 14 appears to be an amendment of 2016. So I  
 15 guess I object to the extent we're claiming  
 16 that this was, in fact, in effect at the  
 17 time Phase I was approved, if that's what  
 18 you're claiming it is.  
 19 **MS. WENDLING:** Okay.  
 20 **MR. OLEEN:** But I don't -- I don't  
 21 have an objection if -- whatever was in  
 22 effect at the time, I don't have an  
 23 objection if that is made part of the  
 24 record. I just don't know whether this is  
 25 because there seems to have been a

1 potentially intervening set of amendments.  
2 **MR. STUCKY:** Madam Hearing Officer,  
3 I understand Mr. Oleen's position and I  
4 respect it. My suggestion here in light of  
5 what Mr. Oleen just said is that we admit  
6 this for the purpose under which  
7 Ms. Wendling says it is, but we take  
8 judicial notice of the prior versions of  
9 these statutes and regulations. And so if  
10 in later briefing, you've given us an  
11 opportunity to do later briefing, if the  
12 Division of Water Resources or the City of  
13 Wichita or, indeed, the District wants to  
14 reference a prior regulation in our  
15 briefing we be allowed to do so. So my  
16 suggestion is that you take judicial notice  
17 of prior iterations of these rules and  
18 regulations.

19 **PRESIDING OFFICER:** I think that's a  
20 good way to cover that, so I will take  
21 administrative notice of the prior  
22 iterations of 5-1-1.

23 **MS. WENDLING:** Thank you.

24 **BY MS. WENDLING:**

25 Q. Mr. Pope, based on your knowledge of the ASR

1 conclusion 13.

2 **A. Yes.**

3 Q. And I'll have you go ahead and read conclusion  
4 13 for us, please.

5 **A. 13, you say this is part of the conclusions?**

6 Q. Yes.

7 **A. That if the project is operated so that recharge  
8 credits cannot be withdrawn if the static water  
9 level in the index well is below the lowest  
10 index water level for that index well, comma,  
11 the public interest in not diverting Equus Beds  
12 groundwater will be protected.**

13 Q. Now I realize this was quite sometime ago, do  
14 you recall what was meant by the public interest  
15 of not diverting Equus Beds groundwater will be  
16 protected?

17 **A. I'm going to read this one more time to myself.  
18 As I read this and think about the broader  
19 question there, this was one of the conclusions  
20 that related to the question of where the index  
21 water level was set, and this goes to the point  
22 at that time that by setting the index water  
23 there, it was apparently my determination at the  
24 time that that would then protect the public  
25 interest such that people with other water**

1 program, do you believe a change in definition  
2 from being the unsaturated zone to removing  
3 unsaturated zone would potentially enlarge the  
4 basin storage area?

5 **A. I haven't examined that question until now when  
6 you've asked it. It's not something I really,  
7 you know, dealt with in my report. It would  
8 appear at first blush that, yes, by removing the  
9 unsaturated portion that it could enlarge the  
10 basin storage area. That seems to be the plain  
11 reading, if I understand it. You have a second  
12 point here about the index levels that I'm not  
13 sure which way that plays out.**

14 Q. Okay. Switching gears again, if you can find  
15 Exhibit 26 in the District's binder, which I  
16 believe is Volume II.

17 **A. Okay. It's in the -- all right. So which --**

18 Q. Behind the rules and regs, there should be a tab  
19 for 26.

20 **A. 26, okay. Wait a minute, am I in the right one?  
21 You're looking for rules?**

22 Q. No, this would be the Phase I findings and  
23 orders.

24 **A. Okay, right, I have it.**

25 Q. Okay. If you can go to page 12 of 21 and find

1 **rights diverting from the Equus Beds Aquifer  
2 would be protected. I think that's my general  
3 interpretation reading this now in a broader  
4 sense thinking about the index water level from  
5 that era so many years ago.**

6 Q. Okay. If you will turn ahead to tab 25 in that  
7 same binder.

8 **A. Yes.**

9 Q. And this is the memorandum of understanding  
10 between Equus Beds Groundwater Management  
11 District and the City of Wichita?

12 **A. Yes.**

13 Q. Do you -- are you familiar with this document?

14 **A. Well, I haven't studied it recently, but, yes,  
15 I'm -- I know about it, I recall it from the  
16 time period I -- now, this is the first one or  
17 the second one?**

18 Q. This is for Phase I.

19 **A. Okay, yeah. Yes.**

20 Q. Can you tell us what role this MOU played in the  
21 Phase I process?

22 **A. Well, I was certainly well aware of the efforts  
23 made at that time by GMD2 and the City to work  
24 cooperatively towards the implementation of  
25 Phase I of the recharge project, of the ASR, and**

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1 this document, I think, was to reduce to writing  
 2 the cooperative effort, if you want to use that  
 3 term, between the parties. And it was then --  
 4 and it was submitted to us as well and referred  
 5 to in the order in consideration.  
 6 And so, yes, it played a, I would say a  
 7 significant role in regard to the processing, I  
 8 guess, of applications for Phase I. You know,  
 9 beyond that, it's -- I'd have to look at the  
 10 specific provisions in terms of, you know, what  
 11 explicitly related to any given provision.  
 12 Q. Okay. If you can flip back, I think, to page 5,  
 13 an attachment A to this memorandum of  
 14 understanding.  
 15 A. Yes.  
 16 Q. And on the bottom two lines, do you see  
 17 references to regulations?  
 18 A. Yes. On the -- we're still -- at the first  
 19 page, I take it, under the category aquifer  
 20 storage and recovery application number 45,567,  
 21 there's --  
 22 Q. Do you see a reference to the basin storage  
 23 area?  
 24 A. Yes, there's a -- item 2, basin storage area  
 25 shall be defined as compliance with K.A.R.

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1 5-1-1(k), dot, dot, dot. Then there's the  
 2 number 6 below that.  
 3 Q. Do you believe from your involvement in this  
 4 process that the definitions were an important  
 5 part of this agreement?  
 6 A. Well, apparently so. I wasn't a party to the  
 7 agreement, but I was certainly familiar with it,  
 8 and we considered it at the time, and, yes, I  
 9 would have to say yes to that.  
 10 Q. Okay. Do you recall with Phase I what the  
 11 purpose of ASR Phase I was?  
 12 A. Well, I guess in a broader sense it was to  
 13 simply implement the artificial recharge program  
 14 at that time. You say the purpose of the  
 15 agreement or the purpose of the --  
 16 Q. Purpose of the overall project?  
 17 A. Of the project. Well, it was -- yes, it was to  
 18 implement an artificial recharge program for the  
 19 Equus Beds in the vicinity of the City's well  
 20 field, based on a source and treatment and the  
 21 other steps in the process.  
 22 Q. Do you recall anything about it being used to  
 23 retard the movement of the chloride plume from  
 24 Burrton?  
 25 A. I do. I was actually involved in the Intensive

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1 Groundwater Use Control Area process related to  
 2 the Burrton plume.  
 3 Q. So you're very familiar with --  
 4 A. It's been a while, but, yes, I remember.  
 5 Q. All right. To help you flip through more  
 6 binders, in Volume VI of the District's binders,  
 7 and you might not need to refer to this --  
 8 A. Okay.  
 9 Q. -- is the transcript of Phase I.  
 10 A. I'm sorry, the what?  
 11 Q. The transcript from the Phase I hearing.  
 12 A. Really? Okay.  
 13 Q. I am sure you want to read that this evening to  
 14 walk down memory lane.  
 15 A. Okay. This is a history lesson.  
 16 Q. And maybe it will be helpful because you  
 17 referred to some specific language in that. So  
 18 in Volume VI, the sixth binder, there is an  
 19 Exhibit 78.  
 20 A. Did you say Volume VI?  
 21 Q. Yes.  
 22 A. I have the volume now.  
 23 Q. Okay. The first exhibit in that volume should  
 24 be 78.  
 25 A. Okay.

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1 Q. And if you could find page 10 of the transcript.  
 2 A. Yes, I have it.  
 3 Q. And there is the first full paragraph that I  
 4 draw your attention to and have you read the  
 5 first six lines or so. The first sentence.  
 6 A. First full paragraph says, I might note that the  
 7 Division of Water Resources' staff will not be  
 8 providing testimony for or against these  
 9 applications, but Mr. Rolfs here, Mr. Rolfs --  
 10 Mr. Leland Rolfs located to my right, as legal  
 11 counsel for me as chief engineer, will be  
 12 allowed to call witnesses for the limited  
 13 purpose of introducing documentation from the  
 14 agency files pertaining to these applications.  
 15 And I might also note that to my left is Mr. Jim  
 16 Bagley. And during the course of the  
 17 proceedings I will allow them also to ask  
 18 questions of the witnesses.  
 19 Q. Do you recall, sorry it was so long ago, why the  
 20 DWR staff was not providing testimony for or  
 21 against the application?  
 22 A. In this particular proceeding, based on this and  
 23 general recollection, I guess, we were simply  
 24 there to hold the hearing and take testimony  
 25 from the parties, as we basically always do.

1 **We, the Division of Water Resources, at least**  
2 **during my tenure, and I think that's still true,**  
3 **weren't there with a position advocating or**  
4 **opposing the application, simply there to hear**  
5 **the testimony from the applicant and any**  
6 **objectors.**  
7 **I -- I would note that there have been**  
8 **times that I recall, probably during my tenure**  
9 **and I think since, where based on the complexity**  
10 **of an issue and documentation from the files and**  
11 **any review that had been done, there were times**  
12 **whenever essentially the staff and Division of**  
13 **Water Resources were bifurcated between one**  
14 **group that provided staff assistance to the**  
15 **hearing officer, which let's assume it was the**  
16 **chief engineer at the time, and a different**  
17 **separate number of staff members, one or more,**  
18 **were acting as essentially a separate party.**  
19 **And I recall that being done in some very**  
20 **big complex cases where it seemed to make sense**  
21 **for someone to be allowed to present relevant**  
22 **evidence from the records of the Division of**  
23 **Water Resources as well as the expertise from**  
24 **staff members. So we took care, in the ones I'm**  
25 **thinking of - there's various ways of handling**

1 **hearings and stuff - to have a wall, firewall**  
2 **between the chief engineer hearing the case and**  
3 **those two categories, the separate party versus**  
4 **people that were assisting me as chief engineer.**  
5 **So it got a little complicated, but we were**  
6 **really trying to be very fair, very open, and**  
7 **trying to ensure that the information that**  
8 **needed to be considered was available.**  
9 Q. Okay. Thank you. That's my only question for  
10 the transcript.  
11 **A. That went way beyond it, I'm sorry.**  
12 Q. No, you can stash it away, read it at your  
13 leisure.  
14 **A. Okay.**  
15 Q. Going back to the findings and order for Phase  
16 I, which is in the binder with the rules and  
17 regs, Exhibit 26.  
18 **A. Let me see, which volume is that in?**  
19 Q. II, Volume II.  
20 **A. Yeah. Binder II, okay.**  
21 Q. So Exhibit 26 is the findings and order for  
22 Phase I.  
23 **A. That's item 26? Yeah, findings and order for**  
24 **Phase I.**  
25 Q. And on page 11 of 21 is conclusion number 3 --

1 **A. Yes.**  
2 Q. -- regarding passive recharge?  
3 **A. Yes.**  
4 Q. Do you recall why you felt it was important to  
5 include language regarding passive recharge  
6 credits in your conclusions?  
7 **A. Well, yes, in the sense that the process was to**  
8 **prepare an order normally of this nature with**  
9 **findings of fact and then conclusions and then**  
10 **ultimately the order itself. And so this**  
11 **section of the order were those conclusions, and**  
12 **one of the significant issues was passive**  
13 **recharge, passive recharge credits. And so this**  
14 **item was included because, you know, based on**  
15 **the findings and everything that led up to this,**  
16 **I concluded that -- what item number 3 says**  
17 **here.**  
18 Q. Okay.  
19 **A. This is how that was determined at that point.**  
20 Q. Do you recall passive recharge being a  
21 significant issue with Phase I?  
22 **A. Yes, it was.**  
23 Q. Okay. There's been some discussion, and I'm not  
24 sure I followed the answer, on the chief  
25 engineer's ability to modify water permits after

1 a final order has been issued. Could you  
2 clarify your understanding of the -- of the  
3 chief engineer's ability and authority to modify  
4 his final order?  
5 **A. Yes, and I think previously I testified and**  
6 **tried to distinguish between some ministerial**  
7 **type changes to correct errors or to, more**  
8 **specifically to find, an example I gave,**  
9 **locations of points of diversion versus a**  
10 **substantive modification to an order. Now --**  
11 **and I spoke to that in my earlier testimony, and**  
12 **so the -- the substantive change, then, my point**  
13 **of that testimony was, I think, at least in**  
14 **part, was, you know, looking at the law, looking**  
15 **at the regulations and the substance of the**  
16 **matter and determining that a modification may**  
17 **not be allowed if it changes that substance. So**  
18 **I think in general, that's the way I would**  
19 **characterize that.**  
20 **There's all kinds of -- I mean, if you're**  
21 **talking explicitly about this, I think that**  
22 **would be my answer. You know, there can be**  
23 **examples of other orders where, you know, they**  
24 **retain jurisdiction or something like that, you**  
25 **know, that might affect that decision.**

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1 Q. Okay. And with Phase I, do you recall any  
2 discussion about the City accumulating recharge  
3 credits?  
4 **A. Well, yes, I think in a general sense, uh-huh --**  
5 Q. Okay.  
6 **A. -- that that's provided for in the order. If I**  
7 **understand right.**  
8 Q. No, that was -- yes. Did you consider factors  
9 such as changing water levels in the City's  
10 ability to accumulate recharge credits?  
11 **A. Well, there are some parameters, as I recall,**  
12 **listed in the Phase I order that did affect when**  
13 **recharge credits could be accumulated; the index**  
14 **levels, for example, would be the primary one.**  
15 Q. Do you recall if there was a specific goal in  
16 terms of quantity of recharge credits the City  
17 was trying to accumulate?  
18 **A. I believe there is some language in the Phase I**  
19 **order. It runs my mind that there was -- I'm**  
20 **trying to dig through the details. Approval of**  
21 **certain -- maybe in the amendment or something,**  
22 **recharge credit permits, and there's a limit --**  
23 **I'm not sure whether I'm -- I don't want to**  
24 **confuse Phase I and II, but I believe a specific**  
25 **quantification of how many recharge credits**

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1 **could be accumulated. It seems like there was a**  
2 **number, 18 or 19,000 acre-feet or something like**  
3 **that.**  
4 Q. With the -- one of the reasons or -- that we've  
5 been given for this, need for this proposal is  
6 the City's ability to access recharge credits  
7 below the minimum index level.  
8 **A. Okay.**  
9 Q. They refer to it as the credits being  
10 stranded --  
11 **A. Yes.**  
12 Q. -- they would have accumulated the credits but  
13 not be able to access them. Do you recall if  
14 that was contemplated?  
15 **A. Well, I -- what I primarily recall about that**  
16 **off the top of my head is that we set that lower**  
17 **index level at the point -- the lowest level**  
18 **that I think we had records for at that time, if**  
19 **I recall, and thinking that that would then**  
20 **provide the zone from which recharge credits**  
21 **could be accumulated.**  
22 Q. It's okay if you don't --  
23 **A. You know, we were working with the -- sort of**  
24 **the records we had and the circumstances that we**  
25 **had, I don't think I -- other than what I**

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1 **earlier testified to, I don't know that I have**  
2 **much to add in regard to this issue of stranded**  
3 **credits.**  
4 Q. Okay.  
5 **A. And I think I commented on that earlier to some**  
6 **degree that I think that's a legitimate issue.**  
7 Q. Okay. It's been identified a few times  
8 throughout this hearing that there was never a  
9 cap placed on the accumulation of recharge  
10 credits. Do you recall if there was ever a cap  
11 discussed?  
12 **A. Like I said a minute ago, I think only in the**  
13 **context of what applications were permitted for**  
14 **recharge, I forget the official term now,**  
15 **recharge credit, referred to as recharge credit**  
16 **permits and that sort of thing. And I don't --**  
17 **I don't remember any details, you know, beyond**  
18 **that.**  
19 Q. Okay.  
20 **A. I think -- I'm not sure that there's -- I don't**  
21 **recall any other overarching, explicit provision**  
22 **other than that.**  
23 **MS. WENDLING:** Well, thank you for  
24 putting up with all of my historical  
25 questions. I have no further questions.

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1 **PRESIDING OFFICER:** It's about 5  
2 after 5:00. I suggest we take a break  
3 until 8:30 tomorrow morning. Thank you.  
4 (Whereupon, the proceedings were  
5 adjourned at 5:08 p.m.)  
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1                                    C E R T I F I C A T E

2    STATE OF KANSAS    )  
3    SEDGWICK COUNTY    )    ss:

4                    I, Nancy L. Rambo, a Certified Shorthand  
5    Reporter, within and for the State of Kansas, do  
6    hereby certify that the foregoing is a true and  
7    correct transcript of the proceedings had at the  
8    time and place hereinbefore set forth.

9                    I further certify that I am not a relative  
10   or employee or attorney or counsel of any of the  
11   parties, nor am I a relative or employee of such  
12   attorney or counsel, nor am I financially  
13   interested in the action.

14                    WITNESS my hand and official seal at  
15   Wichita, Sedgwick County, Kansas, this 23rd day of  
16   March, 2020.

18                                    NANCY L. RAMBO, R.P.R., C.S.R.  
19                                    Registered Professional Reporter  
20                                    Certified Shorthand Reporter

21    Costs:  
22  
23  
24  
25

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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage*

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*Formal Hearing*  
*XI*  
*March 6, 2020*

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1 STATE OF KANSAS  
2 BEFORE THE DIVISION OF WATER RESOURCES  
3 KANSAS DEPARTMENT OF AGRICULTURE  
4  
5 In the Matter of the City )  
6 of Wichita's Phase II ) Case No.  
7 Aquifer Storage and ) 18 WATER 14014  
8 Recovery Project in Harvey )  
9 and Sedgwick Counties, )  
10 Kansas, )  
11 Pursuant to K.S.A. 82a-1901  
12 and K.A.R. 5-14-3a  
13  
14  
15 FORMAL HEARING  
16 VOLUME XI  
17  
18 This matter came on for Formal Hearing  
19 before Constance C. Owen, Presiding Officer, at  
20 the First Mennonite Church, 427 West Fourth,  
21 Halstead, Harvey County, Kansas, commencing at  
22 8:59 a.m., on the 6th day of March, 2020.  
23  
24  
25

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1 A P P E A R A N C E S  
2  
3 City of Wichita, Department of Public  
4 Works and Utilities, appears by their attorney,  
5 Brian K. McLeod, Deputy City Attorney, 435 North  
6 Main, 13th Floor, Wichita, Kansas 67202.  
7  
8 Equus Beds Groundwater Management District  
9 No. 2 appears by their attorneys, Thomas A. Adrian  
10 and David J. Stucky, Adrian & Pankratz, 301 North  
11 Main, Suite 400, Newton, Kansas 67114. Also  
12 present were Leland Rolfs and Tim Boese.  
13  
14 Division of Water Resources appears by  
15 their attorneys, Aaron B. Oleen and Stephanie  
16 Murray, Kansas Department of Agriculture, 1320  
17 Research Park Drive, Manhattan Kansas 66502.  
18  
19 Intervenors appear by their attorney,  
20 Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
21 Kansas 67056.  
22  
23  
24  
25

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1 **PRESIDING OFFICER:** We're now on the  
2 record. It is just before 9:00 a.m. on  
3 Friday, March 6th, 2020, and we are  
4 resuming the hearing of the City of  
5 Wichita's request to modify their ASR Phase  
6 II project.

7 Before we begin with proceedings,  
8 we're -- a few housekeeping details. Since  
9 we did not get finished during this week,  
10 we are looking at potential days for the  
11 future to resume, and we are going to  
12 explore the dates of April 6 and 7, 27 and  
13 28, and May 27 and 28. And we will try to  
14 work out finishing this up during that time  
15 frame. Any other preliminaries before we  
16 start?

17 Okay. Mr. Pope, you are back on the  
18 stand. You are still under oath.

19 **MR. STUCKY:** And actually to save  
20 him the steps, we have no further questions  
21 for Mr. Pope.

22 **PRESIDING OFFICER:** Okay. So that  
23 was Mr. Stucky for the District.  
24 Mr. McLeod.

25 **MR. MCLEOD:** I think I have only

1 one.

2 **MR. STUCKY:** Well --

3 **PRESIDING OFFICER:** I'm confused.

4 **MR. STUCKY:** Yeah, hold on, if -- is  
5 he allowed to do further cross if we don't  
6 do any more direct, that's my question?

7 **PRESIDING OFFICER:** Honestly, I have  
8 not been considering limiting things quite  
9 that strictly in the interest of a complete  
10 record. So assuming this won't be  
11 extensive, he said one question, let's go  
12 forward.

13 **MR. STUCKY:** Then I may have more  
14 questions, I'm going to reserve my right to  
15 ask more questions.

16 **PRESIDING OFFICER:** That's quite all  
17 right.

18 **MR. STUCKY:** Okay.

19 **CROSS-EXAMINATION**

20 **BY MR. MCLEOD:**

21 Q. Good morning, Mr. Pope.

22 **A. Good morning.**

23 Q. You may remember yesterday I'd asked you a  
24 question about whether the District had made any  
25

1 recommendation on passive recharge credits and  
2 you couldn't remember. Would you look with us  
3 again at Exhibit 25, the Phase I MOU that  
4 Ms. Wendling was asking you about yesterday?

5 **A. Let's see, which book is that in?**

6 Q. I'm going to guess Volume I of the District.

7 **PRESIDING OFFICER:** 25? Volume II.

8 **BY MR. MCLEOD:**

9 Q. Volume II of the District.

10 **A. Excuse me just a second here. Exhibit 25, was  
11 it?**

12 Q. Yes.

13 **A. I think I have it now.**

14 Q. And as an attachment to that exhibit, which  
15 Ms. Wendling also discussed, there is an exhibit  
16 or attachment A which reflected negotiated  
17 recommendations that the District was making on  
18 the ASR Phase I permit application, correct?

19 **A. I'm sorry, where are you now in that document?**

20 Q. Attachment A to that document.

21 **A. Yes.**

22 Q. The recommendations that Ms. Wendling was  
23 talking about when she was discussing that  
24 document with you.

25 **A. Okay, there's -- I see staff recommendations**

1 **there on the first page, is that where you are?**

2 Q. Yes, that's where it begins, I think it carries  
3 over as well to the next page.

4 **A. Yes.**

5 Q. And, Mr. Pope, just to refresh your  
6 recollection, would you review that and let us  
7 know if you see in those District  
8 recommendations any recommendation one way or  
9 the other on passive recharge credits?

10 **A. Okay, give me a minute to look at that.**

11 **MR. STUCKY:** Can you clarify where  
12 you are at, Mr. McLeod?

13 **MR. MCLEOD:** Attachment A to the  
14 Phase I MOU.

15 **A. Mr. McLeod, I -- I reviewed the attachment A to  
16 the memorandum of understanding between the GMD  
17 and the City of Wichita, I do not see in the MOU  
18 a reference to passive recharge credits on those  
19 two pages you asked me to review.**

20 **BY MR. MCLEOD:**

21 Q. And that includes on that attachment A?

22 **A. Yes, I'm referring to attachment A, those first  
23 two pages you asked me to look at.**

24 Q. So does that refresh your recollection,  
25 Mr. Pope, that the District did not make a



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1 recommendation on passive recharge credits one  
 2 way or the other?  
 3 **A. Well, I don't see anything in the MOU regarding**  
 4 **that. I -- my recollection is that the District**  
 5 **would have submitted actual recommendations as**  
 6 **is normally the case on any proposed**  
 7 **applications for permit to appropriate water.**  
 8 **And there may be a separate document for that, I**  
 9 **do not recall, and so I -- all I can say from**  
 10 **this is it's not in here.**  
 11 Q. Okay. Thank you.  
 12 **PRESIDING OFFICER:** Okay.  
 13 Mr. Oleen.  
 14  
 15 **CROSS-EXAMINATION**  
 16 **BY MR. OLEEN:**  
 17 Q. Good morning, Mr. Pope.  
 18 **A. Good morning.**  
 19 Q. I'm losing my voice. Some might say it's Karma  
 20 from too many objections.  
 21 **A. No comment.**  
 22 Q. Back -- back to the discussion of what at some  
 23 point was called passive recharge credits in  
 24 terms of the ASR Phase I proceedings. At the  
 25 time ASR Phase I was being worked out,

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1 discussed, and there were proceedings associated  
 2 with that, the full ASR infrastructure had not  
 3 yet been constructed; is that correct?  
 4 **A. No, if you -- if you're asking about the**  
 5 **discussions prior to the approval of Phase I?**  
 6 Q. Yes.  
 7 **A. No, I don't believe any facilities would have**  
 8 **been constructed at that point in time.**  
 9 Q. Okay. And so I'm just trying to understand,  
 10 because obviously as you pointed out in your  
 11 Phase I approval order, the initial approval  
 12 order, you did expressly prohibit passive  
 13 recharge credits, right?  
 14 **A. Yes.**  
 15 Q. And so I'm just -- I want to go back to the  
 16 context under which that prohibition was  
 17 ultimately imposed a condition by you, and so at  
 18 the time, we didn't have ASR infrastructure that  
 19 was yet constructed, right?  
 20 **A. That's correct.**  
 21 Q. Okay. And so then what again was the context  
 22 that caused you -- what was the -- what was the  
 23 suggestion or proposal by Wichita or anyone else  
 24 that caused you to specifically say passive  
 25 recharge credits would be prohibited in your

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1 Phase I approval order?  
 2 **A. Well, prior to the issuance of the order**  
 3 **approving Phase I, there was a period of time in**  
 4 **which the City had began discussions,**  
 5 **particularly with GMD No. 2 but also with the**  
 6 **Division of Water Resources, and I think as I**  
 7 **testified yesterday, prior to consideration of**  
 8 **the application for Phase I, we had already gone**  
 9 **through the rule making process. So there had**  
 10 **been extensive discussions in -- in our office**  
 11 **with staff and legal counsel, myself as we were**  
 12 **developing the rules for the artificial recharge**  
 13 **program.**  
 14 **And -- and so on one hand you had the**  
 15 **City's endeavor being considered, the**  
 16 **discussions that we just alluded to, in fact, a**  
 17 **minute ago about -- that led to the MOU, the**  
 18 **first MOU. And so I was well aware from the**  
 19 **early discussions by the City of the proposal**  
 20 **for passive recharge credits.**  
 21 Q. Okay. And so those initial discussions, can you  
 22 elaborate on what was discussed, what the  
 23 proposal was that ultimately you decided to not  
 24 allow as specifically saying passive recharge  
 25 credits are not allowed?

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1 **A. I think it was in the rule making process as we**  
 2 **at the Division went about looking at how would**  
 3 **such a project work, what are the issues and**  
 4 **what should be considered. And -- and so early**  
 5 **on, the question of passive recharge was a part**  
 6 **of that because of the nature of the proposal as**  
 7 **we understood it. The -- I'm trying to think**  
 8 **as -- as I think about your question.**  
 9 Q. I know it's been a long time and let me see if I  
 10 can help you understand my confusion.  
 11 **A. Okay.**  
 12 Q. So here today in the context of the proposal  
 13 before us, we're in a situation where the  
 14 aquifer is basically full, right?  
 15 **A. Yes. Okay.**  
 16 Q. But back when Phase I was being considered, that  
 17 was not really the case, right? That was the  
 18 point of trying to come up with this Phase I  
 19 framework, correct?  
 20 **A. Well, I think as I indicated earlier in my**  
 21 **testimony, the concept of artificial recharge**  
 22 **was being explored by the City, and I think we**  
 23 **also know from the record, and I think it's**  
 24 **certainly my expert report, that the -- there**  
 25 **was the development of the City's well field**

1 over time, and after that occurred and after  
2 those water rights had been established, then  
3 the Equus Beds Groundwater Management District  
4 No. 2 came into being and promulgated its rules;  
5 and amongst those things was the rules related  
6 to safe yield based on studies and information  
7 and -- and the various things that were  
8 available at that time.

9 And so if you look at the rules that were  
10 in -- the City's water rights and their  
11 development, then the rules that were developed  
12 based on studies that occurred by U.S.  
13 Geological Survey and others about recharge and  
14 then looking at water levels, I think, yes,  
15 there was an issue. And I think as I also  
16 testified, when I was approached by the City, I  
17 was willing to consider the concept of  
18 artificial recharge because, again, there was an  
19 issue.

20 And so -- so then you had the -- the  
21 proposal for artificial recharge being  
22 considered as a part of a planning process for  
23 water supply by the City, and then that led the  
24 Division of Water Resources to start working on  
25 the rules and regulations that would be needed

1 to allow such a project to be considered from a  
2 regulatory standpoint. And it was a part of  
3 that process, together with what they had  
4 suggested to start with, that led us to focus on  
5 the passive recharge credit issue. It was an  
6 important issue, and that's why as a part of the  
7 development of the rules that we came to the  
8 conclusions we did.

9 Q. But what was being -- what concept or proposal  
10 was being considered that caused you to deem it  
11 necessary to specifically prohibit passive  
12 recharge credits? It would seem odd if it's  
13 just going to be addressed without the concern  
14 originating from some -- some proposal that was  
15 proffered by the City? You know, here today,  
16 right, the proposal that some claim amounts to a  
17 passive recharge credit is this concept of AMCs,  
18 so -- so what was being proposed back in Phase I  
19 that led people to say, no, that's passive  
20 recharge credits and we need to specifically  
21 prohibit those?

22 A. It was a front-and-center issue that was a part  
23 of the conceptual proposal by the City because  
24 they said we'd like to do -- we have this  
25 artificial recharge project we'd like to

1 put recharge credits in at the time?  
2 A. No, that's not what I've said. They wanted to  
3 do both. They -- yes, the original proposal was  
4 to -- you know, started with bank storage wells  
5 originally, that evolved into direct surface  
6 diversion, combination of things, and that --  
7 that involved diversion of water from the Little  
8 Arkansas River system, take the water over to  
9 allow artificial recharge, both physical  
10 recharge but also that same time they asked,  
11 could we get credit if we don't pump our wells.  
12 So it was a part of that early evolution of  
13 the -- both the project and our regulatory  
14 framework that we developed.

15 Q. Okay. So you said that back then it was, you  
16 think maybe the proposal was -- would be both  
17 credits from Wichita's proposal, with a lower  
18 case P, not the one we're dealing with today,  
19 back then it was maybe discussed that Wichita  
20 would get some sort of recharge credit for  
21 physical recharge credits and a recharge credit  
22 for not pumping wells, right?

23 A. Yeah, the thrust of the project was a  
24 traditional artificial recharge project which  
25 involved diverting water from the source,

1 consider and could we get credit for recharge  
2 by not pumping our wells? It was a  
3 front-and-center question, and so it was very --  
4 it was central to the development of the project  
5 and what concept would have been allowed.

6 And so we just didn't pick this up out of  
7 the air and say, oh, by the way, because -- and  
8 we tried to develop an understanding of how an  
9 artificial recharge project should be regulated  
10 and what are the issues. We knew what was being  
11 proposed. And so lots of discussions during the  
12 course of the rule making process, including,  
13 you know, public discussions, the hearing, all  
14 of those things that led me ultimately to decide  
15 to address that issue in the rules. I thought  
16 it was a very logical thing, to be up front so  
17 people knew what the rules of the road would be.

18 Q. So you're saying back then, the -- the concept  
19 that was proposed that led to your prohibition  
20 on passive recharge credits was that Wichita,  
21 they didn't want to physically put water into  
22 the aquifer then, they wanted to take it from  
23 somewhere, take it straight to town, and get a  
24 credit that you ultimately determined was to be  
25 passive; they didn't want to actually physically

1 put recharge credits in at the time?  
2 A. No, that's not what I've said. They wanted to  
3 do both. They -- yes, the original proposal was  
4 to -- you know, started with bank storage wells  
5 originally, that evolved into direct surface  
6 diversion, combination of things, and that --  
7 that involved diversion of water from the Little  
8 Arkansas River system, take the water over to  
9 allow artificial recharge, both physical  
10 recharge but also that same time they asked,  
11 could we get credit if we don't pump our wells.  
12 So it was a part of that early evolution of  
13 the -- both the project and our regulatory  
14 framework that we developed.

15 Q. Okay. So you said that back then it was, you  
16 think maybe the proposal was -- would be both  
17 credits from Wichita's proposal, with a lower  
18 case P, not the one we're dealing with today,  
19 back then it was maybe discussed that Wichita  
20 would get some sort of recharge credit for  
21 physical recharge credits and a recharge credit  
22 for not pumping wells, right?

23 A. Yeah, the thrust of the project was a  
24 traditional artificial recharge project which  
25 involved diverting water from the source,

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1 treating it, I think initially there was  
 2 recharge basins, one or more of those, and as  
 3 well as the evolution of the recharge through  
 4 wells. But I'm just saying that they did early  
 5 on also ask and raise the question, if we don't  
 6 pump our municipal wells X amount, can we get a  
 7 recharge credit for not pumping the wells. So  
 8 that issue -- I'm not saying that was the  
 9 dominant, only thing that happened out of the  
 10 gate; I'm just saying there was the proposal to  
 11 do actual artificial recharge, and then they  
 12 asked about this other possibility.  
 13 Q. And that other possibility, when they were  
 14 asking about not pumping their wells in the well  
 15 field, what other source of water of theirs, if  
 16 you recall, were they saying they would use  
 17 instead?  
 18 A. Well, of course, they have Cheney Reservoir as  
 19 a -- you know, they had contracted with the  
 20 Bureau of Reclamation for water storage in it  
 21 going back a long time, I don't know the exact  
 22 dates on that, so that was one of their sources,  
 23 and the Equus Beds was their other, Equus Beds  
 24 well field.  
 25 And so then -- and I think by that time

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1 period, water level declines were being  
 2 experienced, the safe yield rules were adopted,  
 3 all these things evolved over time. I don't  
 4 remember exactly, you know, every detail, but  
 5 that's what led to the project being proposed,  
 6 Phase I being proposed; our rules were developed  
 7 before we -- we considered the application for  
 8 Phase I. So it ...  
 9 Q. So --  
 10 A. I don't know what else to say, I'm not sure ...  
 11 Q. Well, I'm probably not being as clear as I  
 12 should, but I think I understand now. So back  
 13 when they were asking about this concept of what  
 14 at some point came to be called passive recharge  
 15 credits, they were asking about not pumping the  
 16 well field --  
 17 A. Right.  
 18 Q. -- and they were asking not pumping that but  
 19 using some other source to -- in lieu of the  
 20 well field, and that other source might have  
 21 been Cheney to use in lieu of not pumping the  
 22 well field?  
 23 A. Yeah, I think at that point, they had Cheney and  
 24 Equus Beds well field, originally maybe the City  
 25 had some wells closer in to the City; if I

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1 vaguely recall, there was some -- some wells in  
 2 the Ark River or alluvial system, or something.  
 3 So -- but I think there were some water quality  
 4 issues, and I don't know what all on that but  
 5 I -- I don't want to -- I don't want to try to  
 6 go further than what I have the detail on there.  
 7 But -- so it was basically Cheney and the well  
 8 field, Equus Beds well field, those two things,  
 9 and -- well, I think that answered the question.  
 10 Q. Okay. Shifting gears here and this is my last  
 11 line of questioning, if you would please turn to  
 12 Exhibit 26, which is -- I don't recall what  
 13 volume it's in. It is the Phase I approval.  
 14 A. Yes, I have it.  
 15 Q. And I want to direct your attention to  
 16 paragraph 13 on page 12 of 21.  
 17 A. Page 12 of 21?  
 18 Q. Yes.  
 19 A. Okay.  
 20 Q. Do you see that paragraph 13 that starts with,  
 21 that if the project is operated?  
 22 A. Yes, I see it.  
 23 Q. I believe that this paragraph has been discussed  
 24 a couple times in these proceedings, I think  
 25 once by you. My question is -- it's related to

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1 this paragraph 13. So at the time the Phase I  
 2 project approval was approved by you, it  
 3 established what we've been calling the current  
 4 bottoms, the minimum index levels, right?  
 5 A. I think that's correct.  
 6 Q. Okay. And those bottoms that we call the  
 7 current bottoms of the minimum index cell  
 8 levels, they also happen to be the water levels  
 9 in 19 -- on or around 1993. Is that your  
 10 understanding?  
 11 A. I -- I believe that's correct, that sounds  
 12 right.  
 13 Q. And so at the time that Phase I was being  
 14 considered and you were -- and you issued this  
 15 approval, those 1993 water levels were the worst  
 16 on record post development, is that your  
 17 understanding, the lowest on record post  
 18 development?  
 19 A. Yes. As I recall, that level was selected  
 20 because it had -- it was the lowest level that  
 21 had thus far occurred, with the record we had in  
 22 the past.  
 23 Q. And so I don't know if -- are you aware in the  
 24 current proposal that we're having these  
 25 proceedings about that the City has done some

1 modeling about average saturated thickness in  
2 all these index cells, if their proposal is  
3 approved, as far as lowering the current  
4 bottoms, are you aware that they've done that?  
5 **A. I'm aware that modeling has been done. I have**  
6 **not been involved in that or examined the**  
7 **modeling or the results. I'm just aware of it.**  
8 Q. Okay. And so my question, then, is isn't it  
9 true that at the time Phase I was approved there  
10 hadn't -- modeling hadn't been done that  
11 assessed the average saturated thickness of the  
12 index cells at those '93 levels, but rather  
13 those levels were just picked basically because  
14 that was the worst -- those are the worst levels  
15 on record at the time?  
16 **A. I think your last statement, I would agree in**  
17 **regard to the worst levels, or the lowest levels**  
18 **to date at that time. I can't say this for**  
19 **certain, but I do know that I believe it was the**  
20 **U.S. Geological Survey had done modeling of the**  
21 **Equus Beds area pretty early on. I don't**  
22 **remember the exact sequence of really when that**  
23 **occurred relative to when we were considering**  
24 **the rules in Phase I and, you know, that sort of**  
25 **thing. So just because I -- I don't remember**

1 **withdraw credits that that would protect the**  
2 **ability to divert water from the aquifer by**  
3 **other users, I think is what we were trying to**  
4 **get to there --**  
5 Q. So essentially --  
6 **A. -- at that point in time.**  
7 Q. Okay. So essentially -- and these, the bottoms  
8 that were established by this Phase I approval,  
9 that establishes the bottom of the basin storage  
10 area, correct?  
11 **A. That's correct.**  
12 Q. And so essentially it's kind of been referred to  
13 as a bathtub or a box --  
14 **A. Okay.**  
15 Q. -- but the basin storage area is space in the  
16 aquifer that Wichita is allowed to operate the  
17 ASR system and they can -- they're allowed to  
18 legally withdraw credits so long as it's within  
19 that box, right?  
20 **A. That's correct.**  
21 Q. And below that box, though, is deemed to not be  
22 a portion within the aquifer from which Wichita  
23 may operate the ASR -- their ASR withdrawal  
24 credits, correct?  
25 **A. Yes.**

1 **the sequence of those things, but I know some of**  
2 **the studies and modeling in the observation**  
3 **would go back a long time.**  
4 Q. So isn't it true that this paragraph 13, it's  
5 talking about the City not being able to  
6 withdraw recharge credits below the minimum  
7 index levels that -- that are contemplated at  
8 the time this Phase I was approved?  
9 **A. Give me just a second here.**  
10 Q. Sure. Let me, if I may, ask you a different  
11 way.  
12 **A. Okay.**  
13 Q. As a result of the -- of this Phase I approval  
14 and even really as reinforced, continued under  
15 the Phase II approval, Wichita cannot withdraw  
16 recharge credits below the established minimum  
17 index cell levels, which happen to be also  
18 levels of 19 -- around 1993, correct?  
19 **A. Yes, that's correct, and I -- after your**  
20 **paragraph 13 here, I was trying to reread this**  
21 **and put this in context to what was going on**  
22 **then. But, yes, I think given those water**  
23 **levels that had occurred at that point in time,**  
24 **this conclusion was simply trying to say if that**  
25 **is the lowest level from which they could then**

1 Q. So this paragraph 13, isn't it true it says you  
2 can't -- you can't operate the system and  
3 withdraw recharge credits below the bottom of  
4 the box that was established by this Phase I  
5 approval?  
6 **A. Well, I -- if I understand your question, I -- I**  
7 **would simply say based on the information we had**  
8 **at that time and based on the understanding of**  
9 **the aquifer, what was being proposed, all of**  
10 **that, this was simply a conclusion that said**  
11 **this would allow them to operate, you know,**  
12 **recharge in, withdrawal, you know, recovery of**  
13 **credits within the box as you've described it.**  
14 **So that was the information we had at that time,**  
15 **this was a conclusion that we drew.**  
16 Q. Right. And they can only withdraw --  
17 **A. Yeah.**  
18 Q. -- credits when water levels are within the box,  
19 right?  
20 **A. Yeah, I think that's the way it was structured.**  
21 Q. Right. And so -- 'cause if they go below the  
22 box, they're deemed to be operating in an area  
23 which they're not authorized to operate as far  
24 as withdrawal of credits?  
25 **A. As far as withdrawing credits, that's correct,**

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1 **yeah.**  
 2 Q. But if -- if the box were to be lowered --  
 3 **A. Uh-huh.**  
 4 Q. -- then they can withdraw credits so long as  
 5 they don't withdraw them below whatever the new  
 6 bottom of the box is?  
 7 **A. Yes, I think that's the issue, that's one of the**  
 8 **two issues that's been raised in this proceeding**  
 9 **is -- one of those is AMCs, the other is index**  
 10 **water levels.**  
 11 Q. So as long as they're operating -- as long as  
 12 they're withdrawing the ASR credits within the  
 13 box, whatever the box is determined to be,  
 14 they're lawfully withdrawing credits, right?  
 15 **A. I guess that's a fair statement, yeah.**  
 16 **MR. OLEEN:** No further questions,  
 17 thank you.  
 18 **A. Uh-huh, thank you.**  
 19 **PRESIDING OFFICER:** Ms. Wendling.  
 20  
 21 **CROSS-EXAMINATION**  
 22 **BY MS. WENDLING:**  
 23 Q. Good morning. Could I have you look at, I  
 24 believe it might still be there, the findings  
 25 and order for Phase I, Exhibit 26 in the GMD2

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1 Volume II binder on page 15 of 21?  
 2 **A. Yes, I think that's the same document we --**  
 3 Q. Where we just were?  
 4 **A. -- we were in, so you say page 15?**  
 5 Q. Yeah, page 15 of 21. And I believe that I  
 6 understood correctly Mr. Oleen was asking you if  
 7 you recall looking at the saturated thickness  
 8 when considering the 1993 levels, the minimum  
 9 index levels?  
 10 **A. Okay, I'm sorry, what's your question then?**  
 11 Q. I was just trying to make sure I was  
 12 understanding the previous testimony.  
 13 **A. We were discussing the selection of the lower**  
 14 **index levels, and, of course, implicitly in that**  
 15 **is you basically have the saturated thickness**  
 16 **above and below that.**  
 17 Q. Okay. Can you -- on page 15, can you read  
 18 number 4 for us?  
 19 **A. Yes, on page 15 of 21, number 4 says, that the**  
 20 **locations of the index wells and the index water**  
 21 **levels for the basin storage area shall be as**  
 22 **set forth in attachments 3 and 4 to this order.**  
 23 Q. If you flip back, oh, roughly ten pages to find  
 24 attachment 4.  
 25 **A. Yes, I think I have it.**

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1 Q. So this is the attachment referred to as being  
 2 used in setting of minimum index levels?  
 3 **A. That appears to be the case. I -- I haven't**  
 4 **studied that detail, but it's -- it's entitled**  
 5 **City of Wichita Aquifer Storage and Recovery**  
 6 **Project Water Levels and Storage Capacities.**  
 7 Q. I know it's been awhile, but does this document  
 8 look at all familiar to you?  
 9 **A. No. I don't recall it specifically but --**  
 10 Q. Okay.  
 11 **A. -- but I think I still recall the concept in**  
 12 **general.**  
 13 Q. Okay. Do you, in the one, two, three, four,  
 14 fifth column over, do you see the column for  
 15 index cell storage coefficient?  
 16 **A. Index cell storage coefficient, yes.**  
 17 Q. Do you recall how that storage coefficient was  
 18 used or considered in the minimum index level  
 19 determination?  
 20 **A. Actually, I really don't, I'm sorry, I -- you**  
 21 **know, there was a lot of technical detail, and I**  
 22 **probably tended to rely on staff that was**  
 23 **working with me on this level of detail more**  
 24 **than what I personally probably -- I'm sure we**  
 25 **discussed it and I was aware of it at the time.**

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1 Q. Okay.  
 2 **A. I just don't recall --**  
 3 Q. Okay.  
 4 **A. -- too many of the specifics about that.**  
 5 Q. Are you able to tell me what the storage  
 6 coefficient means, what is the significance of  
 7 that number?  
 8 **A. Well, I think so. I believe it's the fun --**  
 9 **unless I'm misunderstanding here, I believe it's**  
 10 **the -- you know, basically in any aquifer you**  
 11 **have a combination of the sands and silts and**  
 12 **gravels or whatever material is in the**  
 13 **particular type of aquifer - in this case, I**  
 14 **think we're talking about a, you know, kind of a**  
 15 **traditional aquifer with those materials - and**  
 16 **then you have the water that's stored within**  
 17 **those materials.**  
 18 **And so this, I think, is related to the**  
 19 **fundamental concept that in the saturated**  
 20 **thickness, you have -- you know, typically in**  
 21 **aquifers we used to think of 15 or 20 percent of**  
 22 **those materials is actual water, and the rest of**  
 23 **it is the sands and silts and gravels. So I**  
 24 **think this is using that same concept -- now,**  
 25 **again, remember, I haven't looked at this for a**

1 long, long time, so I'm kind of making a  
2 presumption here that they, we, at the time had  
3 information about, based on probably well logs  
4 and all the information that was looked at, what  
5 that storage coefficient was at each incremental  
6 level of a -- if you look at a column, if you  
7 think in terms of a column, like from a -- we  
8 typically get these from well logs and  
9 information that had been used for studies up to  
10 that point.

11 Q. Okay. And then looking at the first row of data  
12 for cell number 1 and we see an index cell  
13 storage coefficient of 0.05?

14 A. Yes.

15 Q. As a layperson, can I translate that to 5  
16 percent water on average in that cell?

17 A. I think that's what it's referring to again, but  
18 I hope I'm not assuming too much when I look at  
19 this, in all fairness. Yeah, and you see some  
20 that say .25, you see others at .22, et cetera,  
21 et cetera, so ...

22 MS. WENDLING: Thank you, I don't  
23 have any further questions.

24 PRESIDING OFFICER: Mr. Stucky.

25 MR. STUCKY: I actually wasn't going

1 was being developed, the primary source of water  
2 for the City of Wichita was Cheney Reservoir; is  
3 that correct? Other than the Equus Beds  
4 Aquifer?

5 A. Oh, other than the Equus Beds Aquifer, I think  
6 that's correct.

7 Q. So there may have been some discussions about  
8 Cheney Reservoir in the context of passive  
9 recharge credits because that was the other  
10 known source of water other than the Equus Beds,  
11 is that what you were saying?

12 A. I'm not sure that's exactly what I was saying.  
13 The City had available to it the surface water  
14 source at Cheney and then their well field. And  
15 we were really focusing on the well field in the  
16 proposed artificial recharge project, but in the  
17 context of that, the reason that relates back to  
18 passive recharge credits is that because they  
19 have these two very different sources of supply,  
20 they would have the capability to when water was  
21 available at Cheney to use it and not pump their  
22 Equus Beds wells.

23 So that opened up the possibility, then,  
24 that if you're using Cheney during a certain  
25 time period, based on water availability,

1 to ask further questions but I will at this  
2 point. And I also have lost my voice  
3 partially, and I apologize but it's 'cause  
4 I had a tube rammed down my throat  
5 yesterday so ...

6  
7 REDIRECT EXAMINATION  
8 BY MR. STUCKY:

9 Q. You were asked just a moment ago some questions  
10 about passive recharge credits by both  
11 Mr. McLeod and Mr. Oleen. Do you recall those  
12 questions, Mr. Pope?

13 A. Just this morning?

14 Q. Yeah, this morning?

15 A. Yes, I think so.

16 Q. And I am just going to ask you two very brief  
17 lines of questioning. First of all, you were  
18 asked the question about the sources of water  
19 that the City had available to them --

20 A. Yes.

21 Q. -- back at the time that ASR Phase I was being  
22 contemplated. Do you recall that question?

23 A. Yes.

24 Q. And, in fact, you indicated that as -- when ASR  
25 Phase I was being developed, this whole concept

1 et cetera, et cetera, then you wouldn't have to  
2 pump your well field as much. And that opened  
3 up, then, the possibility of, well, if we don't  
4 pump the wells, can we get credit for not  
5 pumping them because we've got this other  
6 alternative, and, you know, goes through this  
7 whole line of discussion that we've had  
8 yesterday and today. I think that's the context  
9 in which maybe Cheney might be involved but ...

10 Q. So just to clarify the record, though, as far as  
11 the source, Cheney Reservoir, this concept of  
12 passive recharge credits wasn't limited to  
13 Cheney Reservoir being the source. Is that a  
14 true statement?

15 A. Yes, I think that's true. No, that really -- it  
16 wasn't -- really wasn't involved other than just  
17 the fact that it might indirectly relate to how  
18 much you would choose to pump or not pump.

19 Q. So in other words, if the City had a source of  
20 water from El Dorado Reservoir --

21 A. Uh-huh.

22 Q. -- and they pumped water from El Dorado  
23 Reservoir in lieu of pumping from the aquifer --

24 A. Uh-huh.

25 Q. -- and they asked for a credit for that, that

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1 would also be a passive recharge credit? It's  
 2 the same concept, right?  
 3 **A. I guess it's the same concept. It's not so**  
 4 **important in terms of where it comes from, it's**  
 5 **a question of -- it's really a question of if**  
 6 **you divert water from your approved source for**  
 7 **Phase I or Phase II, in this case the Little**  
 8 **Arkansas River, it's varied a little bit over**  
 9 **the years in terms of exactly how that was set**  
 10 **up and structured, so that's your approved**  
 11 **source for artificial recharge, and then if that**  
 12 **water is diverted, made available, treated,**  
 13 **whatnot, and on one hand goes directly -- for**  
 14 **direct use, it's approved for that as well,**  
 15 **versus is it used for artificial recharge.**  
 16 **That's -- that's really how that dynamic works.**  
 17 **It's not so important in terms of what other**  
 18 **sources one might have, whether it be El Dorado**  
 19 **or Cheney or whatever.**  
 20 Q. So you've already, I think, answered my next  
 21 question, you said it doesn't matter really what  
 22 the source is. That's the basis of your  
 23 testimony that if the water is taken from the  
 24 Little Arkansas River and sent directly to the  
 25 City and then somehow the City is also asking

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1 for a credit for that --  
 2 **A. That's the issue.**  
 3 Q. Exactly, and that is still a passive recharge  
 4 credit under that scenario, correct?  
 5 **A. That's the heart of the issue of passive**  
 6 **recharge credits, that's right. So if you**  
 7 **either take that source water and physically**  
 8 **recharge it versus diverting that water and**  
 9 **taking it directly to the City for its use,**  
 10 **that's -- that's the fundamental difference in**  
 11 **what we're talking about here, and that's what I**  
 12 **have testified about in my report and yesterday.**  
 13 Q. I would ask that you, in that notebook that's  
 14 already before you, it's Exhibit 26, I'd ask  
 15 that you turn to page 2 out of 21.  
 16 **A. Okay.**  
 17 Q. I'm sorry, it's a ASR order, I might have  
 18 misspoken. It's a ASR order that's shown in  
 19 Exhibit 26 --  
 20 **A. Yes.**  
 21 Q. -- before you.  
 22 **A. That's the -- that's the Phase I order, I**  
 23 **believe.**  
 24 Q. And I apologize for the misstatement, I'm still  
 25 waking up a little bit; my honorary, learned

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1 co-counsel brought me some coffee a moment ago.  
 2 And for the record, I had to kick him out of my  
 3 house after midnight last night so I could get a  
 4 little sleep.  
 5 **A. Okay.**  
 6 Q. At any rate, as we look at that order, which my  
 7 honorary co-counsel just covered up with his  
 8 notebook, there is a definition found on the  
 9 bottom of page 2 of 21 on 10b. Could you read  
 10 that for the record?  
 11 **A. Okay. We're on page 2 of 21, item 10.**  
 12 Q. 10b, could you read that for the record?  
 13 **A. Item 10b says, will the City be considered to be**  
 14 **recharging water into the Equus Beds by the**  
 15 **concept of passive recharge, question mark,**  
 16 **i.e., water which the City could have legally**  
 17 **pumped but did not pump.**  
 18 Q. And I listened to your testimony yesterday, I  
 19 believe that's exactly how you defined a passive  
 20 recharge credit yesterday; is that true?  
 21 **A. I believe that's correct. I think this is**  
 22 **finding -- or this is a part of the findings for**  
 23 **the Phase I order, and these were questions that**  
 24 **I had posed in the prehearing order to be**  
 25 **considered as a part of the proceeding, if I**

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1 **recall.**  
 2 Q. And this definition, as you stated it, is not in  
 3 the context of Cheney Reservoir, in fact, it's  
 4 not limited to Cheney Reservoir; is that  
 5 correct?  
 6 **A. I think that's correct, yeah.**  
 7 Q. And, in fact, when this definition was  
 8 constructed, the idea was to make it broad and  
 9 not limit it to one source like you just stated  
 10 before, correct?  
 11 **A. I think that's correct too.**  
 12 Q. I'd ask that you now turn to the City's proposal  
 13 in the black notebook before you. Tell me when  
 14 you're in that notebook.  
 15 **A. Yes, I think I have the notebook.**  
 16 Q. Could you turn with me to page 1-2 of the City's  
 17 proposal document, and it's also represented as  
 18 Exhibit 1?  
 19 **A. Is this the March 12th, 2018 letter or --**  
 20 **MR. STUCKY:** Your Honor -- Your  
 21 Honor?  
 22 **PRESIDING OFFICER:** Yes.  
 23 **MR. STUCKY:** May Mr. Boese approach  
 24 the witness --  
 25 **PRESIDING OFFICER:** Yes.

1 **MR. STUCKY:** -- under this scenario?  
2 **PRESIDING OFFICER:** To help him find  
3 it, yes.  
4 **MR. STUCKY:** And help him find it?  
5 **BY MR. STUCKY:**  
6 Q. Are you on that page --  
7 **A. Yes, I believe so.**  
8 Q. -- Mr. Pope? And you've had a chance to drink  
9 some water now?  
10 **A. Yeah, I just didn't bring it up, I should have**  
11 **earlier.**  
12 Q. Okay. Well, I wasn't going to ask you further  
13 questions, but since you're my -- been my  
14 favorite witness so far, I am going to ask you  
15 just a few more questions.  
16 **A. Okay.**  
17 Q. At the bottom of page 1-2 of the City's  
18 proposal, it's the second sentence from the  
19 bottom, could you read that aloud for the  
20 record?  
21 **A. Second sentence from the bottom?**  
22 Q. On page 1-2, it starts with the water left.  
23 **A. Yes. The water left in storage as a result of**  
24 **utilizing Little Arkansas River flows rather**  
25 **than groundwater from the EBWF would be**

1 I'm sorry, you say this would be 84?  
2 **MR. STUCKY:** Well, I think it should  
3 be DWR's exhibit since they brought it up,  
4 but I'm -- I'll include it as my exhibit.  
5 **MR. OLEEN:** He wants it, it can be  
6 his label.  
7 **MR. STUCKY:** Okay.  
8 **PRESIDING OFFICER:** Okay. So --  
9 **MR. STUCKY:** It will be the  
10 District's exhibit then, that's fine.  
11 **PRESIDING OFFICER:** -- hearing no  
12 objections, the District's Exhibit 84 will  
13 be admitted.  
14 **BY MR. STUCKY:**  
15 Q. Mr. Pope, do you still have Exhibit 84 in front  
16 of you, the definition of the word store?  
17 **A. I don't believe so, let me see if I ended up**  
18 **with that.**  
19 **MR. OLEEN:** I have another copy.  
20 **A. No, I don't think I ended up with one. Okay. I**  
21 **have it now.**  
22 **BY MR. STUCKY:**  
23 Q. Mr. Pope, do you now have that definition of the  
24 word store in front of you?  
25 **A. Yes.**

1 **considered as an ASR aquifer maintenance credit,**  
2 **or AMC, with similar characteristics to the**  
3 **current ASR recharge credits.**  
4 Q. So now having read that sentence, I'd ask that  
5 you cross-reference back to the definition that  
6 you placed in this ASR Phase I order. The  
7 definition you put of passive recharge credits  
8 in that order says, water which the City could  
9 have legally pumped but did not pump. Now,  
10 compare that to me -- with me to the language in  
11 that proposal where it says, the water left in  
12 storage will be considered an AMC. Isn't that  
13 essentially the exact same thing that was  
14 prohibited as a passive recharge credit?  
15 **A. Yes.**  
16 **MR. STUCKY:** Just so we have a clear  
17 record here, I would like to introduce the  
18 definition of the word store that was  
19 brought up by Mr. Oleen yesterday, I would  
20 like to introduce it as an exhibit.  
21 Whether it be DWR's exhibit, since  
22 Mr. Oleen brought it up, or if it's the  
23 District's Exhibit 84, I would ask that it  
24 be introduced into evidence.  
25 **PRESIDING OFFICER:** Any objection?

1 Q. Okay. You were asked about one aspect of this  
2 definition yesterday, were you not?  
3 **A. I think that's correct.**  
4 Q. Okay. I just want to walk through this  
5 definition just a little bit because I think it  
6 does provide context for our discussion here  
7 today. In entry 1 of 3, and I assume you're  
8 familiar with -- with dictionary entries, a lot  
9 of times there's entry 1, there's entry 2,  
10 there's entry 3, are you familiar with that?  
11 **A. Oh, I think in general terms, yeah.**  
12 Q. Okay. In entry 1, the first item there, it  
13 says, to lay away, accumulate, store vegetables  
14 for winter use, et cetera.  
15 **A. Uh-huh.**  
16 Q. What does the concept of laying away or  
17 accumulate mean in your view -- in your view, is  
18 that an action that would be taken by a human to  
19 essentially accumulate something, what does that  
20 mean?  
21 **A. Yes, it's -- I think of it as taking something**  
22 **and accumulating it, as the word is, essentially**  
23 **storing it so they have it in their possession.**  
24 Q. Likewise, for entry number 2 there, it says to  
25 furnish, to supply, is that what it says in



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1 entry number 2?  
 2 **A. Yes.**  
 3 Q. Same kind of concept, a human is furnishing, is  
 4 creating a supply, is that what it's talking  
 5 about there?  
 6 **A. That's correct.**  
 7 Q. Item number 3 there is the one that Mr. Oleen  
 8 keyed in on yesterday, and he keyed in on the  
 9 terminology to place or leave in a location.  
 10 **A. Uh-huh.**  
 11 Q. But then the definition goes on and it mentions  
 12 what those locations are, it says, such as a  
 13 warehouse, library, or computer memory. Have I  
 14 read that accurately?  
 15 **A. Yes.**  
 16 Q. With respect to a warehouse, if something's left  
 17 in a warehouse, as this definition implies,  
 18 would a human have had to put that item in the  
 19 warehouse in the first place?  
 20 **A. Yes.**  
 21 Q. With respect to a library, if there's books in  
 22 the library, would a human had to have put those  
 23 books in the library in the first place?  
 24 **A. Yes.**  
 25 Q. Same question with respect to computer memory,

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1 if there's documents on a computer, would a  
 2 human have had to put those documents on the  
 3 computer in the first place?  
 4 **A. Yes.**  
 5 Q. And it says in here that those items that are  
 6 put there by humans are available, then, for  
 7 later use, is that what it says?  
 8 **A. That's correct.**  
 9 Q. So in other words, whether it's books in the  
 10 library or it's memory on a computer, those  
 11 aren't things that just naturally exist on a  
 12 computer or in a library; is that right?  
 13 **A. Yeah, somebody has to put them there or create**  
 14 **it.**  
 15 Q. Okay. And same with item number 4 in entry 1,  
 16 it talks about storing surplus wheat. If you're  
 17 storing surplus wheat in an elevator, someone  
 18 has to put, there's a put where you have to put  
 19 that wheat in the elevator; is that right?  
 20 **A. That's correct, as a farm kid, I can tell you**  
 21 **I've done that.**  
 22 Q. And, in fact, last night when we were visiting,  
 23 you told me about growing up on a farm and how  
 24 you worked hard on a farm growing up and you had  
 25 a graduating class of ten --

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1 **A. Yes.**  
 2 Q. -- growing up, and so I assume that you worked  
 3 hard on the farm growing up; is that right?  
 4 **A. That's a fair statement.**  
 5 Q. And I assume that you put grain in a grain bin  
 6 before; is that right?  
 7 **A. Many times.**  
 8 Q. And let me just ask, the grain you put in that  
 9 bin, did you just wake up one morning and it  
 10 just showed up in the bin, or did you have to  
 11 put it there?  
 12 **A. No, we put it there.**  
 13 Q. Okay. I assumed so. So let's move on to entry  
 14 2 of 3 in the definition of -- of store.  
 15 **A. Uh-huh.**  
 16 Q. Number 1 says, something that is stored for  
 17 future use; number 2 also talks about this  
 18 concept of accumulated, right?  
 19 **A. Yes.**  
 20 Q. You have to accumulate something to store it; is  
 21 that right?  
 22 **A. Yes.**  
 23 Q. And number C, I guess, verbatim again, something  
 24 that is accumulated, you have to put it there,  
 25 right, there's a put again; is that right?

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1 **A. That's correct.**  
 2 Q. Now let's go to number D, it talks about a  
 3 reserve fund, is that what it talks about, at  
 4 the end of number D?  
 5 **A. Yes.**  
 6 Q. It's talking about in the context of a reserve  
 7 fund, so in other words we're talking a savings  
 8 account at a bank, is that what we're talking  
 9 about?  
 10 **A. I think that would be a good analogy.**  
 11 Q. Okay. If there's money in a bank that someone's  
 12 placed in their savings account, does that money  
 13 just magically get in the bank, or does the  
 14 human have to put it in the bank to save it?  
 15 **A. It's been my experience a human has to put it**  
 16 **in.**  
 17 Q. Okay. Let me ask you this, follow me with an  
 18 analogy for just a moment to help me understand  
 19 something. If I put money -- two banks, okay,  
 20 bank A, bank B, all right?  
 21 **A. Okay.**  
 22 Q. You follow me?  
 23 **A. Yes.**  
 24 Q. I put money in savings in bank A --  
 25 **A. Yes.**

1 Q. -- all right?  
2 **A. Yes.**  
3 Q. Okay. And I could withdraw that money; is that  
4 right?  
5 **A. Yes.**  
6 Q. Bank B also is a bank where I put no money,  
7 okay?  
8 **A. Put no money?**  
9 Q. I haven't put any money in bank B yet --  
10 **A. Okay.**  
11 Q. -- okay? If I choose not to withdraw my money  
12 from bank A, will bank B just give me some money  
13 just because?  
14 **A. I've never had that happen, I don't think so.**  
15 Q. Okay. So similar to if you don't put water in  
16 an aquifer, you're not just going to magically  
17 accrue a credit generally, is that the case too?  
18 **A. That would be the normal situation.**  
19 Q. Okay. So let's go on to the next one, entry  
20 number 2 there, it talks about placing eggs in a  
21 store. Once again, a human has to put those  
22 eggs in the store; is that right?  
23 **A. Yes.**  
24 Q. They didn't just magically show up in the store  
25 in their natural state; is that right?

1 Q. And so they're put in the store by an employee,  
2 and then they're available for a subsequent  
3 purchase; is that right?  
4 **A. Yes.**  
5 Q. Likewise, let's move on to number 2 of this  
6 definition that Mr. Oleen presented. In the  
7 final definition, it talks about purchased from  
8 a store as opposed to being natural, is that  
9 what it says there?  
10 **A. Let's see, now which line are you --**  
11 Q. I'm in line number 2, it says purchased from a  
12 store as opposed to being natural, is that what  
13 it says there?  
14 **A. Yes.**  
15 Q. So in other words, we're not talking about items  
16 that just naturally exist or naturally appear,  
17 is that what we're talking about here?  
18 **MR. OLEEN:** I object, I think you're  
19 definitely misconstruing that definition.  
20 But if you want to continue your line of  
21 questioning about the noun, go ahead. I  
22 withdraw it.  
23 **MR. STUCKY:** I don't think I'm  
24 misconstruing at all, I'm reading --  
25 **PRESIDING OFFICER:** He withdrew.

1 **A. That's correct.**  
2 Q. Speed this up a little bit, let's go on to entry  
3 3 of 3.  
4 **A. Okay.**  
5 Q. It talks about, in that final one, it says, or  
6 stores of -- of, relating to, kept in, or used  
7 for a store. You see where I'm at in that final  
8 entry?  
9 **A. Yes, I do.**  
10 Q. So in this sense, we're talking about Wal-Mart,  
11 or something, as an example of a store, is that  
12 what it's talking about in this context?  
13 **A. I presume so, yes.**  
14 Q. Okay. Let me ask you this: There's items you  
15 can buy in Wal-Mart, are there not?  
16 **A. Yes.**  
17 Q. How do those items that you can -- if I'm going  
18 to Wal-Mart and I'm shopping with my cart, how  
19 do those items arrive in Wal-Mart in the first  
20 place?  
21 **A. Well, I presume that employees or staff restock  
22 the shelves.**  
23 Q. So someone had to put those items in Wal-Mart in  
24 the first place; is that right?  
25 **A. That's right.**

1 **MR. STUCKY:** Okay. Exactly what it  
2 says.  
3 **BY MR. STUCKY:**  
4 Q. We're distinguishing between -- what we're  
5 talking about is items that are purchased from a  
6 store that didn't just naturally exist there, is  
7 that what we're talking about?  
8 **A. It says, purchased from a store as opposed to  
9 being natural.**  
10 Q. So would you agree that my characterization  
11 might be a fair characterization?  
12 **A. Seems so to me.**  
13 Q. So now let's sum this up as -- all these  
14 definitions presented -- this definition  
15 presented by Mr. Oleen, let's sum it up in the  
16 context of the City's proposal. We talked a lot  
17 about how this definition throughout relates to  
18 a put, you're putting something in a store or  
19 you're putting something in an elevator or  
20 you're putting something in the library, that's  
21 what these definitions are talking about, we  
22 walked through that in great detail; is that  
23 right?  
24 **A. Yes.**  
25 Q. And in all of the contexts we've talked about,

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1 we talked about a human putting those items  
 2 there; is that right?  
 3 **A. That's correct.**  
 4 Q. Mr. Pope, we also -- when we visited last night,  
 5 you told me a little bit about your storied  
 6 career, did you not?  
 7 **A. I guess I must have talked some, yes.**  
 8 Q. And, in fact, I could ask you a question to  
 9 outline all the many accomplishments you made in  
 10 your career, and I believe I could actually  
 11 effectively take a nap at that point; is that  
 12 right?  
 13 **A. Probably so.**  
 14 Q. It's an -- it's an impressive list that goes on  
 15 and on and on, and through that impressive list,  
 16 I think you would understand just in a basic  
 17 sense how water would first arrive at an  
 18 aquifer. Would you not understand -- you would  
 19 understand how water first gets in an aquifer  
 20 before humans -- before humans, you would  
 21 understand that, right?  
 22 **A. Yeah, I think so.**  
 23 Q. So in other words, let's talk about the Equus  
 24 Beds Aquifer and we're talking about a time  
 25 period before humans may have even been in this

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1 area, would there have been water in the Equus  
 2 Beds Aquifer?  
 3 **A. As the geological history evolved and materials**  
 4 **were deposited and then filled with water over**  
 5 **time from natural processes, why, yes.**  
 6 Q. So in other words, as the water first existed in  
 7 the Equus Beds Aquifer, humans didn't put it  
 8 there, did they?  
 9 **A. No, under that -- under that situation, we're**  
 10 **talking about the natural occurrence of the**  
 11 **creation of those formations and then the**  
 12 **filling of the aquifer by -- by recharge,**  
 13 **natural recharge.**  
 14 Q. Yes. So humans did not put water in the Equus  
 15 Beds Aquifer, it naturally existed, is that what  
 16 you just told me?  
 17 **A. Yes.**  
 18 Q. Now, let's talk about the City's proposal. If  
 19 there's ASR II physical recharge, a human is  
 20 putting water in the aquifer; is that right?  
 21 **A. Yes. Source water and physically recharging**  
 22 **into the aquifer.**  
 23 Q. And because of that, under these definitions,  
 24 that's storage; is that right?  
 25 **A. Yes.**

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1 Q. Now, with respect to the AMC proposal --  
 2 **A. Uh-huh.**  
 3 Q. -- have humans put any water in the aquifer?  
 4 **A. Not from artificial recharge, no.**  
 5 Q. So in other words, no storage has occurred based  
 6 on all these definitions we just talked about;  
 7 is that correct?  
 8 **A. I think that's correct.**  
 9 Q. One final thing, Mr. Pope, could you take the  
 10 microphone and slam it down and say, the Pope  
 11 has spoken, for me?  
 12 **A. That's a little overdramatic for me. But thank**  
 13 **you.**  
 14 **PRESIDING OFFICER:** You're excused  
 15 from having to do that.  
 16 **A. Okay. Thanks.**  
 17 **PRESIDING OFFICER:** So I assume you  
 18 are finished at this point?  
 19 **MR. STUCKY:** I'm done.  
 20 **PRESIDING OFFICER:** Okay. At  
 21 this -- any further questions? I'm  
 22 inclined to -- I see a hand, Mr. Oleen?  
 23 Okay.  
 24 **MR. OLEEN:** I promise no more  
 25 English lessons.

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1 **RE CROSS EXAMINATION**  
 2 **BY MR. OLEEN:**  
 3 Q. Mr. Pope --  
 4 **A. Yes.**  
 5 Q. -- we had talked about back when the concept of  
 6 passive recharge credits, I don't know if it was  
 7 called that initially, but back when Phase I was  
 8 being discussed, you said that this concept  
 9 originated or came to the forefront at some  
 10 point, and at that time Wichita had their wells  
 11 in the well field, water rights there --  
 12 **A. Yes.**  
 13 Q. -- and they had Cheney Reservoir, right?  
 14 **A. Before any of the artificial recharge project**  
 15 **was developed, yes.**  
 16 Q. Right, right. And so in these nascent, or  
 17 nascent, I don't know how it's pronounced,  
 18 stages when the City was asking, can we get a  
 19 credit for not pumping something --  
 20 **A. Yes.**  
 21 Q. -- you mentioned that that alternate source that  
 22 they were contemplating was Cheney, right? If  
 23 they could get a credit -- or, I'm sorry, if  
 24 they could get a -- for not pumping their wells  
 25 in the well field, if they could get a credit

1 for instead using water from Cheney, right?  
2 **A. I'm -- I don't think that's -- referring to my**  
3 **testimony yesterday?**  
4 Q. Your testimony today --  
5 **A. Oh.**  
6 Q. -- because we talked about their only available  
7 sources at the time was the well field and  
8 Cheney, and I thought you said that --  
9 **A. I don't think I ever said they would get a**  
10 **credit for using Cheney water. I think what I**  
11 **said, they had, in the traditional physical**  
12 **recharge, a credit for recharging water from the**  
13 **Little Arkansas River system, physically**  
14 **recharging that. And then the other discussion,**  
15 **I believe, related to simply the question of the**  
16 **request for a credit or an AMC for not pumping**  
17 **their Equus Beds wells.**  
18 Q. Right. And instead using an alternate source of  
19 water such as Cheney Reservoir?  
20 **A. Well, the presumption is if they're not pumping**  
21 **their wells, there's another source of water**  
22 **being used; in this case as Phase I and then**  
23 **Phase II, actually, Cheney was not really a part**  
24 **of the discussion. It's lurking in the**  
25 **background, of course, as water they can use,**

1 saying that the proposal was not to get  
2 recharge credits for using Cheney instead  
3 of groundwater, but regardless of where it  
4 came from that the triggering of the credit  
5 request came with the not pumping  
6 groundwater?  
7 **A. I think that's correct. Yeah, that's -- that's**  
8 **what I was trying to say.**  
9 **PRESIDING OFFICER:** So does that --  
10 **MR. OLEEN:** Well, I was confused by  
11 his prior testimony, but I'll move on from  
12 this point.  
13 **BY MR. OLEEN:**  
14 Q. At the time that Phase I was being discussed and  
15 contemplated, Cheney Reservoir was not  
16 authorized for aquifer recharge, correct?  
17 **A. I'm not aware that it's ever been authorized for**  
18 **recharge.**  
19 Q. Right, it's not a trick question, I just wanted  
20 to confirm that its beneficial use was not  
21 aquifer recharge?  
22 **A. No, no, I think it's -- it's authorized for**  
23 **municipal use for the City of Wichita but not**  
24 **for artificial recharge, to my knowledge.**  
25 Q. But the water right, and I don't, I guess,

1 **but it's the -- the actual proposal was divert**  
2 **water from the Little Arkansas system within the**  
3 **restrictions of diverting high flows, et cetera,**  
4 **et cetera, transporting the water, and treating**  
5 **it and then directly delivering that water to**  
6 **the City instead of pumping wells. So the**  
7 **concept is can we get artificial recharge credit**  
8 **for not pumping our wells, that was the context.**  
9 Q. I'm not asking you about the current proposal  
10 today.  
11 **A. Okay.**  
12 Q. Let me ask -- I mean, I'm not --  
13 **PRESIDING OFFICER:** If I could step  
14 in, I think you're talking past each other  
15 a little bit.  
16 **MR. OLEEN:** Okay, I'll start over.  
17 **PRESIDING OFFICER:** Well, I -- what  
18 I'm -- what I think I'm hearing you say,  
19 Mr. Pope, is that the passive recharge  
20 credit that you rejected under the Phase I  
21 project, you saw that as a request for  
22 getting credits for not pumping  
23 groundwater, but it seems like you're not  
24 linking that to the alternative use of  
25 something else? In other words, are you

1 expect you to remember the particular number,  
2 and I said water right, I should say water  
3 permit, but --  
4 **A. Okay.**  
5 Q. -- if I told you that permit 46,627 -- well,  
6 actually, it doesn't matter what the number is.  
7 There is a permit to appropriate that is  
8 essentially the genesis of the ASR recharge  
9 project which allows water to be diverted from  
10 excess flows in the Little Ark?  
11 **A. That's correct, yeah.**  
12 Q. Looks like my battery's gone dead so I'll have  
13 to speak up louder. So that water permit, that  
14 is authorized for aquifer recharge, correct?  
15 **A. Yes. The -- the permits for Phase I, I think**  
16 **the beneficial use was, as per the definitions**  
17 **of Water Appropriation Act, was artificial**  
18 **recharge. Now, I have to think about the**  
19 **sequence of things here, but the -- when the**  
20 **surface diversion was added in, there was --**  
21 **there was an amendment, I think, that added in a**  
22 **surface diversion before Phase I was approved,**  
23 **and that was a -- I believe that was approved**  
24 **for artificial recharge and municipal use in the**  
25 **City of Wichita, which is why the -- and I think**

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1 this was a larger application and permit for  
 2 Phase II, you know, the 45,000 acre-foot range,  
 3 something like that, and that could either be  
 4 used for direct use in the City of Wichita or  
 5 for artificial recharge.  
 6 MR. OLEEN: Okay. Thank you, I  
 7 don't have any further questions.  
 8 PRESIDING OFFICER: Any other  
 9 questions for Mr. Pope?  
 10 MR. ROLFS: No, no questions, Your  
 11 Honor.  
 12 PRESIDING OFFICER: Okay. Hearing  
 13 none, Mr. Pope, you are excused.  
 14 A. Thank you very much. That's what I was waiting  
 15 for.  
 16 MR. STUCKY: Your Honor, may we have  
 17 a five-minute break for me to thank my  
 18 witness and also to take some Tylenol?  
 19 PRESIDING OFFICER: Yeah, let's take  
 20 about a ten-minute break.  
 21 (Thereupon, a recess was taken,  
 22 after which Mr. Rolfs was no  
 23 longer present in the hearing  
 24 room.)  
 25 PRESIDING OFFICER: Okay. We're

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1 back on the record now. It is 10:30 and I  
 2 believe we're going to jump back in time  
 3 and continue with Tim Boese's testimony.  
 4 And, Mr. Stucky, you were questioning him  
 5 at that time?  
 6 MR. STUCKY: No, it was Mr. McLeod.  
 7 PRESIDING OFFICER: McLeod, I'm  
 8 sorry, Mr. McLeod.  
 9 MR. STUCKY: And I would offer to  
 10 bring the mic to him but I'm going to have  
 11 Mr. Boese do so.  
 12 PRESIDING OFFICER: Okay.  
 13  
 14 TIM BOESE,  
 15 having been previously sworn, was  
 16 examined and testified as follows:  
 17  
 18 A. Before we start, Ms. Owen, you had asked me to  
 19 do some research relating to an ASR order.  
 20 Would you like for me to discuss that while we  
 21 have the opportunity?  
 22 PRESIDING OFFICER: Yeah, let's just  
 23 review that, please.  
 24 A. You had asked about an August 1st, 2006 order  
 25 that modified the conditions of the ASR Phase I

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1 original order dated August 5th, 2005. In  
 2 particular, you'd asked about some references to  
 3 some change applications, I believe, and you can  
 4 correct me if I'm mischaracterizing.  
 5 PRESIDING OFFICER: Uh-huh.  
 6 A. So I did do some research a couple nights ago  
 7 because I couldn't quite remember what happened  
 8 to those change applications that were noted in  
 9 that August 6, 2006 order that modified the  
 10 original 2005 order.  
 11 Just for some reference, that August 6th,  
 12 2006 order referenced a series of ASR-related  
 13 water permit applications. And, in fact, there  
 14 was four recharge and recovery well permits,  
 15 which are 45,567 and 45,568 and 45,576 and  
 16 46,081, and it also referenced seven bank  
 17 storage diversion well permits; those were for  
 18 the diversion at the Little Arkansas River bank  
 19 during high flows. And those were 45,569  
 20 through 45,575. So there was seven of those.  
 21 That August 1st, 2006 order that we're --  
 22 that we're discussing, that was to modify the  
 23 original 2005 ASR order to include surface water  
 24 pump sites in certain conditions in that  
 25 original order, which were conditions number 9,

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1 12, 14, 17, 20, and 23, because there were  
 2 pending change applications filed, excuse me,  
 3 filed on four of the bank storage diversion well  
 4 applications, which were 45,572, 45,573, 45,574,  
 5 and 45,575. Those pending change applications  
 6 were point of diversion applications to change  
 7 the four bank storage wells to a surface water  
 8 pump site on the Little Arkansas River.  
 9 And maybe a little bit of background, I'll  
 10 go off the -- off on a tangent slightly, there  
 11 was originally planned to have seven bank  
 12 storage wells, the permits were approved;  
 13 however, I think upon some further research by  
 14 the City and their consultant, they came to the  
 15 conclusion that the area that they were looking  
 16 at would really just support three bank storage  
 17 wells. So at that time, they decided to change  
 18 from seven bank storage wells to three bank  
 19 storage wells and a surface water intake. So  
 20 those changes were pending when that order was  
 21 issued.  
 22 At the same time that order was issued, the  
 23 Division of Water Resources approved the change  
 24 in point of diversion applications to convert  
 25 those four files into a surface water pump site,

1 so they were done at the same day. And I think  
2 there was a specific reason for that, and we can  
3 go into details, but obviously it would be  
4 fairly hard to approve the change application  
5 first because the order didn't reference -- the  
6 original order didn't reference a surface water  
7 intake, so it really had to be done at the same  
8 time. Is that clear --

9 **PRESIDING OFFICER:** Okay.

10 A. -- Ms. Owen, why that would have been done that  
11 way? So those change applications were approved  
12 converting four of those bank storage permits  
13 for wells to one single surface water intake for  
14 Phase I. On that same date in August 1st, 2006.

15 After that, on February 19th, 2007, those  
16 four formerly bank storage permits that were  
17 changed to a surface water intake, and, again,  
18 that's 45,572 through 45,575, were all four  
19 dismissed by the Division of Water Resources  
20 essentially at the request of the City because  
21 the City had filed a new surface water  
22 application, which was 46,578, to replace those  
23 four bank storage wells, original applications.

24 And the reason that the City did that is  
25 because of the rate limitation that was involved

1 that research, I couldn't follow  
2 everything, but if we need to get you more  
3 copies of operable orders, we'll get them  
4 to you.

5 **PRESIDING OFFICER:** Okay. Thank  
6 you. I will request them if I need them.  
7 I don't see a need to request that right  
8 now. Thank you. Thank you, Mr. Boese.  
9 And, Mr. McLeod.

10 A. I may tell Mr. McLeod, he asked me to do some  
11 homework in relationship to if there was  
12 anything in the Water Appropriation Act or the  
13 rules and regulations associated therewith that  
14 talks about changes that can be made to permits  
15 or orders of the chief engineer outside of  
16 K.S.A. 82-708(b) about change applications, and  
17 I did that research and I am prepared to present  
18 my findings to you, Mr. McLeod.

19  
20 **CROSS-EXAMINATION (Cont.)**  
21 **BY MR. MCLEOD:**

22 Q. Yes, please, that was going to be my first  
23 question.

24 A. We're -- we're on the same wave, thank you. I'd  
25 like to clear that up because I've got kind of a

1 with those four bank storage previous permits.  
2 They were 1,000 gallons per minute each, and  
3 then when they were changed to a single surface  
4 water intake site, that would only allow for the  
5 City to divert at 4,000 gallons per minute.  
6 Each one was 1,000, 1,000 times 4 would allow  
7 4,000 gallons per minute. The surface water  
8 intake was designed for 6,000 gallons per  
9 minute, from my understanding. So that's why  
10 that new surface water intake or pump site was  
11 filed by the City to replace those four  
12 individual permits. And that was subsequently  
13 approved, and that's the current Phase I surface  
14 water pump site.

15 That was a lot and I hope that was clear,  
16 but I can certainly try to answer any questions.

17 **PRESIDING OFFICER:** No, I -- I

18 appreciate that. As long as we're on that,  
19 does anyone have any questions about what  
20 Mr. Boese just explained? Mr. Oleen?

21 **MR. OLEEN:** I don't have any  
22 questions other than to say, you know, we  
23 obviously want you to have access to all  
24 the universe of operable Phase I and Phase  
25 II orders. I appreciate Mr. Boese doing

1 mess scribbled here on my notebook, which I  
2 intended to put into a better form. But I  
3 believe -- I'll try to be somewhat concise and  
4 quick, although it may take a little longer than  
5 we had hoped.

6 But we did already talk about K.A.R.  
7 5-5-6(b), and we may have already talked about  
8 5-5-6(c), I can't remember which one we talked  
9 about, but let's go ahead and turn to those.  
10 Those are in the exhibit notebook under the DWR  
11 rules and regulations, 22, Exhibit 22. And I  
12 believe we're talking about page 78.

13 So under -- on page 78, under K.A.R.  
14 5-5-6(b), it talks about if the diversion works  
15 were not constructed at the location originally  
16 authorized -- or authorized for the point of  
17 diversion and the chief engineer (sic) can  
18 demonstrate to the chief engineer that there's  
19 some criteria met, the authorized location shall  
20 be corrected to the actual location by  
21 correctional order by the chief engineer. So  
22 there's the first case where a correction or a  
23 correctional order, a findings and order,  
24 whatever we want to call it, can be issued by  
25 DWR to correct a location.

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1 And now let's go ahead and go to K.A.R.  
 2 5-5-6(c), which starts on page 79 but then  
 3 actually turns into page -- most of it's on  
 4 page 80. This one talks about authorized point  
 5 of diversion and place of use, and without going  
 6 into an excessive amount of detail, let's see if  
 7 I can find it here real quick, it talks about  
 8 the chief engineer being able to correct those  
 9 locations. Oh, there it is, it goes from one  
 10 page to the next, I'm sorry. Says, if a point  
 11 of diversion or place of use meets the following  
 12 conditions, the authorized location shall be  
 13 administratively corrected by the chief  
 14 engineer. I don't think we need to go into  
 15 details under what circumstances those can be  
 16 done unless we want to, but, again, there's a  
 17 correction that can be made to a water right by  
 18 the chief engineer. And I'm looking at my notes  
 19 on that particular regulation, and I think we  
 20 can move on.  
 21 We then talked about, last time about  
 22 82a-710, which would be in Exhibit 21, and that  
 23 is on page 11. This doesn't speak directly to  
 24 the chief engineer issuing an order; this is for  
 25 the return or correction of an application while

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1 it's pending to the applicant to provide that  
 2 additional information or correction.  
 3 And I can probably summarize it easier than  
 4 trying to read it. Essentially, if the  
 5 application is found not to be complete or  
 6 there's information missing or needs a  
 7 correction, the applicant has the opportunity to  
 8 correct that application or provide that  
 9 additional information. So the chief engineer  
 10 necessarily would not issue an order because  
 11 it's still a pending application, but they -- at  
 12 the request of the applicant, those corrections  
 13 or additions can be made. So I think we'll move  
 14 on from that one.  
 15 Let's go ahead and move to K.S.A.  
 16 82a-733(d), I believe, which is, again, in 21  
 17 and found on page 21, I believe. Unfortunately,  
 18 my notes are not as clear as I had hoped; I  
 19 intended on doing that last night, but as you  
 20 know, I was assisting Mr. Stucky at his house  
 21 last night for a little while.  
 22 MR. ADRIAN: What was the statute  
 23 cite, Tim?  
 24 A. Let me turn to it real quick, that's K.S.A.  
 25 82a-733. And if we go to section (d) on

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1 page 22, it talks about before any state agency  
 2 makes any loan or grant, or provides any  
 3 cost-share funds, I'm going to kind of skip over  
 4 that, it says, a state agency may require the  
 5 person or entity to submit to, and have approved  
 6 by, the chief engineer a water conservation plan  
 7 consistent with, and then I'll probably end  
 8 there. But, again, that is an implication that  
 9 the chief engineer can approve a water  
 10 conservation plan for a particular water right.  
 11 And let's go to (f) in that same -- same  
 12 statute, it says, the chief engineer may approve  
 13 the conservation plans and practices as required  
 14 pursuant to the provisions of this section on  
 15 such terms, conditions, and limitations as  
 16 deemed necessary to carry out the provision of  
 17 this section. So, again, the chief engineer can  
 18 approve a conservation plan under -- under that  
 19 scenario. And I think that covered that. Let  
 20 me look here real quick. Yes, I think I covered  
 21 everything on that.  
 22 Related to the conservation plan, let's go  
 23 ahead and skip forward back to Exhibit 22, under  
 24 5-3-5(l), which is on page 33. And about middle  
 25 of the page or bottom of the -- about a third of

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1 the page, changes in a water conservation plan.  
 2 This is, if a person required to implement a  
 3 water conservation plan desires to make a  
 4 material change in the plan, that person shall  
 5 submit a request to make the change to the chief  
 6 engineer on a form prescribed by the chief  
 7 engineer.  
 8 So, again, there's a way to make a change  
 9 to a conservation plan by submitting a -- a  
 10 request to the chief engineer. I don't think it  
 11 necessarily says that the chief engineer would  
 12 then -- how he would approve that, but I think  
 13 there's an implication that he could then  
 14 approve that change in the water conservation  
 15 plan based on that submittal as discussed in  
 16 this regulation.  
 17 PRESIDING OFFICER: It refers to the  
 18 written approval.  
 19 A. I'm sorry, you're absolutely right. Again, I  
 20 missed that in my notes so thank you. So I  
 21 think that's fairly clear that a change in a  
 22 water conservation plan can -- can occur.  
 23 I think one of the ones that I discussed  
 24 was reduction of a water right, which can be  
 25 found in K.A.R. 5-7-5, and my notes say

1 specifically subsection (f), and that's on  
2 page 119 of this same exhibit, which is 22. And  
3 I was off a page, it looks like, should be,  
4 yeah, page 118 is where it starts.

5 Again, this is -- talks about what can be  
6 reduced by -- by an applicant requesting to the  
7 chief engineer different items that can be  
8 reduced on a water right, authorized maximum  
9 annual quantity of water, authorized maximum  
10 rate of diversion, place of use, point of  
11 diversion, and so forth. I think maybe I'll  
12 just leave it at that in discussion of time.

13 Again, that's -- these are reductions;  
14 these are not necessarily -- well, they are  
15 changes, but they're not asking for something  
16 new. So we're talking about reducing the place  
17 of use; that isn't someone that can say, well, I  
18 have 100 acres over here in this quarter and I  
19 want to reduce it to 80 acres over here in this  
20 other quarter section. That's a change  
21 application under K.S.A. 82-708(b). This is  
22 talking about someone that says, I have 100  
23 acres, I'm going to use this as an example, and  
24 on that authorized place of use 100 acres, I  
25 want to shrink it down to 80 without any new --

1 new acres being irrigated, that would be a type  
2 of reduction. So that's a distinction between a  
3 reduction and a change.

4 And if we go over to subsection (f), again,  
5 this is the reduction that could occur at the  
6 request of the applicant, chief engineer can --  
7 can approve that request. And I think of  
8 particular note, it says, under (f), a request  
9 to reduce an existing water right shall not be  
10 considered to be an application for a change  
11 pursuant to K.S.A. 82a-708(b) and amendments  
12 thereto, so no application fee shall be  
13 required. I think it's purposely making the  
14 distinction that you don't have to file a change  
15 under 82a-708(b) to have that reduction. Any  
16 particular questions about that, Ms. Owen? Or  
17 Mr. McLeod?

18 BY MR. MCLEOD:

19 Q. No.

20 A. Hearing none, I'm going to move on. I believe I  
21 may have mentioned flowmeter requirements or  
22 flow -- order to require a flowmeter or  
23 requirement of the chief engineer to require a  
24 flowmeter, which can be found in K.A.R. 5-1-7.  
25 Again, we're still in Exhibit 22, and my notes

1 say we're on page 14. Let's go ahead and flip  
2 to page 14. And, I'm sorry, I'm beginning to  
3 lose my voice too, apparently it's contagious,  
4 although I did not have surgery as Mr. Stucky  
5 did.

6 MR. STUCKY: No excuse.

7 MR. ADRIAN: What page was that?

8 A. That's on page 14. And I'm going to look here  
9 and see if I can find it just real quick.

10 Again, this talks about the requirement to  
11 install a flowmeter. Oh, I found it, I'm sorry,  
12 I was looking at -- my notes had a big (F)  
13 instead of a small (f) is why I couldn't find  
14 it.

15 It says, the owner of a water right,  
16 including a domestic water right, or an approval  
17 of an application, shall also be required by the  
18 chief engineer to install a flowmeter or other  
19 suitable water measurement device that meets the  
20 requirements of these regulations on each  
21 authorized point of diversion if it is necessary  
22 for the chief engineer to effectively administer  
23 water rights to prevent impairment, to protect  
24 minimum desirable streamflow, to conserve water,  
25 or to otherwise carry out the duties of the

1 chief engineer set out -- set forth in the  
2 Kansas Water Appropriation Act.

3 And then the next -- well, I don't think I  
4 need to read the next one, but this obviously  
5 has the implication that the chief engineer can  
6 require a flowmeter to be installed. It doesn't  
7 particularly say, I don't know, in this order --  
8 in this regulation, it says he'll issue an  
9 order, but obviously it can require a flowmeter  
10 in that sense, and I think that was one of  
11 the -- one of the ones that I mentioned that can  
12 be done by the chief engineer.

13 Let's go back and, I'm sorry, I wish I  
14 would have had time to -- so we didn't have to  
15 flip back and forth, but so I don't lose my  
16 place let's go back to Exhibit 21, 82a-742(c).  
17 And I have in my note that's on page -- starts  
18 on page 28, but I think the section I want to  
19 look at is on page 29.

20 And I should have said 82a-742 and the  
21 subsection we can get to, but this is Division  
22 of Water Right, semicolon, Application,  
23 semicolon, Fee is the title of the -- of the  
24 statute. Again, this is specifying that an  
25 owner of a water right that has not been



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1 abandoned may divide the water right into two or  
 2 more distinct water rights without losing  
 3 priority; and then it lists some steps that that  
 4 applicant has to do, notify the chief engineer  
 5 in writing, they have to designate some things  
 6 on the application and -- probably don't need to  
 7 go into great detail.

8 But if we go to -- let me make sure where  
 9 I'm at here. There it is, it's under (c), on  
 10 page 29, if the chief engineer finds the request  
 11 complies with subsections (a) and (b), the chief  
 12 engineer shall issue an order dividing the water  
 13 right and describing the terms and conditions of  
 14 each water right. Again, there's an order by  
 15 the chief engineer that did not file -- fall  
 16 under K.S.A. 82a-708(b).

17 And let's go ahead and go on to -- and I  
 18 know no one wants me to do this, I'm going to  
 19 flip back to 22 because that's the order I have  
 20 them written down. And we go to K.A.R.  
 21 5-4-1(e), and that is on page 71. And, again,  
 22 we should probably start actually on the  
 23 previous page -- pages. It's a fairly long  
 24 regulation, this is, I guess what we'll call the  
 25 impairment, one of the impairment regulations

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1 before they were bifurcated into two separate  
 2 impairment regulations.

3 This actually starts on page 69, and I  
 4 think we could spend an hour or two talking  
 5 about impairment, and, I don't know, perhaps we  
 6 will later, but let's just go ahead and skip to  
 7 (e) where it says notice of order, which is on  
 8 page 71 near the top. Basically says, the chief  
 9 engineer shall given a written notice and  
 10 directive to those water right holders whose use  
 11 of water must be curtailed to secure water to  
 12 satisfy the complainant's prior right. So,  
 13 again, the chief engineer can issue an order  
 14 related to this regulation to, at least, in this  
 15 sense, modify the permit, whether that's  
 16 temporarily, or whatever, to satisfy another  
 17 user's rights.

18 Let move to K.A.R. 5-7-4(b), which is the  
 19 Water Rights Conservation Program, we call that  
 20 the WRCP, which is on page 117. And, again, I  
 21 don't know if I misspoke, but it was K.A.R.  
 22 5-7-4(b), and which is Water Rights Conservation  
 23 Program, semicolon, Tier 2. We probably could  
 24 spend some detail talking about why you have  
 25 tier 1 and tier 2, but let's just talk about

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1 this particular one. If we skip down partway,  
 2 it says, the owner or owners of a water right  
 3 shall submit an application to the chief  
 4 engineer, or the chief engineer's authorized  
 5 representative, requesting that the water right  
 6 be enrolled into that water rights conservation  
 7 program.

8 My notes are not entirely clear, but I  
 9 think there's an implication that then the chief  
 10 engineer could approve that application. Yes, I  
 11 found it, I'm sorry, under (d), close to the  
 12 bottom of page 117, requirements of any order  
 13 enrolling a water right into the WRCP shall  
 14 include, and then it lists some -- some items.  
 15 So, again, there's another sort of modification  
 16 or an order that can be issued by the chief  
 17 engineer related to a water right outside of  
 18 82a-708(b).

19 And if we flip back then to 21, Exhibit 21,  
 20 particularly K.S.A. 82a-717(a), which is on  
 21 page 15, this is talking about diversions by  
 22 common-law claimants and others and injunctions.  
 23 And if we go to little (b) to big (B) about  
 24 close to the bottom of page 15, it says,  
 25 following the investigation, the chief engineer

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1 may issue an order, consistent with K.S.A.  
 2 82a-706(b), and amendments thereto, and rules  
 3 and regulations of the chief engineer, that  
 4 limits, curtails, or prevents a diversion and  
 5 use of water by any person without a prior right  
 6 to the same water or that otherwise disposes of  
 7 the complaint. Again, another order that can be  
 8 issued by the chief engineer related to water  
 9 rights.

10 And let's go ahead and move to K.S.A.  
 11 82a-745, which is on page 30 of that same  
 12 exhibit, which is 21. And I'll let everybody  
 13 catch up for a minute. And we're looking at,  
 14 again, 82a-745, this deals with Water  
 15 Conservation Areas, Establishment Procedures,  
 16 Duties of a Chief Engineer, Notice, Orders,  
 17 Consent Agreement, Review is the title. And if  
 18 we go to --

19 **BY MR. MCLEOD:**  
 20 Q. Sorry, Mr. Boese, can you pause for a moment?  
 21 In our copy of the exhibit book, we lapse out of  
 22 the KWAA into a series of statutes in K.S.A. 42.  
 23 **MR. MCLEOD:** May I approach the  
 24 witness to see what he is looking at?  
 25 **A.** I'm sorry.

1 **PRESIDING OFFICER:** Yes.  
2 **A.** I'm in 82a-745, and the next page should be  
3 page 31, is that not how it is in your notebook?  
4 **BY MR. MCLEOD:**  
5 Q. Somehow the notebooks are a little different.  
6 Go ahead, Mr. Boese.  
7 **A.** Okay. Well, let me -- while you're doing that,  
8 I temporarily lost my spot so if you would give  
9 me one minute to reorganize myself where I was  
10 at. I'll wait on you, Mr. McLeod. I think we  
11 may have possibly another exhibit notebook if  
12 you'd like to look at --  
13 Q. No, we're fine, I found a page in this book that  
14 has that statute.  
15 **A.** Okay, I apologize for that. So, again, we're  
16 talking about water conservation areas, excuse  
17 me, and on page 30, about two-thirds of the way  
18 down, under subsection little (b), it says, a  
19 consent agreement and order of designation of a  
20 water conservation area pursuant to this section  
21 shall -- shall define the boundaries of a water  
22 conservation area and may include any of the  
23 following corrective control provisions. And  
24 I'm not going to waste our time, I think,  
25 reading that in, but there again is a consent

1 agreement and order that can be issued by the  
2 chief engineer related to water conservation  
3 areas, which obviously would have water rights  
4 involved.  
5 And I believe I may have only one more  
6 specific one to reference. We're still in  
7 Exhibit 21, 82a-718, which is abandonment, which  
8 is located on page 16. It's titled Abandonment  
9 of Water Rights, Notices, Hearing, Review of  
10 Action Exceptions. And then page 16, this  
11 describes the steps that the chief engineer  
12 would make in determining if a water right is  
13 abandoned.  
14 I don't think it uses the word order, but  
15 it talks about the chief engineer terminating a  
16 water right, which I've seen dismissals by the  
17 chief engineer, I believe they're generally done  
18 by an order so I -- maybe the word order is in  
19 here, but I -- I didn't find it but I think  
20 there is an implication there if the chief  
21 engineer would -- would terminate or dismiss a  
22 water right, it would obviously take a -- an  
23 order.  
24 There's some other orders that a chief  
25 engineer can issue, and I think we could -- we

1 could spend most of the day talking about all  
2 these, there's penalty orders, civil penalties  
3 for violations, overpumping, those kind of  
4 things.  
5 I do want to talk a little bit about, I  
6 think I mentioned orders that we generally would  
7 call -- the Division of Water Resources would  
8 call correctional orders. And those are for  
9 things like typos and omissions. I do not  
10 believe there's a specific regulation or statute  
11 related to an agency issuing an order to correct  
12 a typo or a -- or an omission in an approval of  
13 an application or something like that.  
14 I want to talk just a little bit about what  
15 occurred in 1999. And there was a -- some  
16 legislation, ended up being called the House  
17 Substitute for Senate Bill 287, which was passed  
18 by the Kansas legislation in 1999. Essentially  
19 became K.S.A. 82a-1903, I believe, I may  
20 actually have that. I do.  
21 K.S.A. 82a-1903, and this has a long --  
22 somewhat of a long and storied history, but that  
23 essentially required the Division of Water  
24 Resources and the groundwater management  
25 districts to convert any standards and policies

1 that they had that had general application and  
2 effective law into rules and regulations.  
3 You had to request those to be done by a  
4 certain time, and we don't need to go into the  
5 detail, but -- and the reason I remember this is  
6 because it was sort of a frantic time, I think,  
7 at the GMD2 office 'cause we were required to  
8 submit any standards and policies that we had  
9 into rules and regulations. And it ended up  
10 being also with other agencies 'cause we also  
11 have some standard -- had some standards and  
12 policies with the Kansas Corporation Commission  
13 and the Kansas Department of Health and  
14 Environment, they've all had to be converted to  
15 rules and regulations.  
16 And I don't know, I think if Mr. Rolfs was  
17 probably here, I think he could say DWR was  
18 probably in a frantic state too, and that's  
19 probably why we have this gigantic document of  
20 rules and regulations related to DWR because I  
21 would imagine some of these were in standards  
22 and policies and had to be converted to rules  
23 and regulations.  
24 So suffice it to say -- and there's  
25 actually an attorney general's opinion related

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1 to groundwater management districts, and that  
 2 is -- I don't know if I have the -- I don't know  
 3 if I have the attorney general's opinion with  
 4 me, and I could -- I'd be glad to provide that  
 5 because there was some -- there was some  
 6 question on how that limited the power of a GMD,  
 7 if we had standards and policies and they had to  
 8 be converted. But the crux of it, I think,  
 9 ended up being that the groundwater management  
 10 districts and, I think by -- by probably  
 11 extension, the Division of Water Resources could  
 12 have administrative policies as long as they  
 13 didn't have general application and force and  
 14 effect of law.  
 15 So obviously things like how you run your  
 16 office, I don't know, personnel things, those  
 17 didn't have to be in rules and regs. And I  
 18 think that -- sort of that how do you correct  
 19 typos, omissions would probably fall under that.  
 20 I'm not an attorney so -- but I think that would  
 21 have been our take. Obviously if I send out  
 22 something to an individual and it has a typo on  
 23 it, I can resend it. I don't think I have to  
 24 have a regulation.  
 25 And I believe probably Division of Water

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1 Resources, I would anticipate, operates under  
 2 that sort of principle that if there's a typo or  
 3 an omission in an approval or an order by the  
 4 chief engineer it can just be administratively  
 5 corrected. I think that probably falls out  
 6 of -- out of that scope of that 82a-1903, that  
 7 would be my interpretation. But the lawyers in  
 8 the -- in the room might be able to tell me  
 9 different.  
 10 But as far as correcting a simple typo or  
 11 omission, again, maybe DWR has an internal  
 12 policy on how to do that, maybe they have a  
 13 standard on how to do that, maybe it's buried  
 14 somewhere in these -- in these statutes and  
 15 regulations, I -- I did not find it. I did a  
 16 fairly extensive research.  
 17 So, again, Mr. McLeod, you had asked me to  
 18 do that research, it took a little bit of time,  
 19 I'm not complaining at all, but there are a  
 20 number of items that I think I've identified  
 21 that can be changed or modified under a water  
 22 right without filing a change application that  
 23 is required in 82a-708(b). The thing I did not  
 24 find is -- is that the chief engineer can modify  
 25 permits in the respect that the City's proposal

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1 is asking for.  
 2 **MR. STUCKY:** Madam Hearing Officer,  
 3 I wasn't actually listening that carefully,  
 4 did the witness ask for us to brief whether  
 5 or not an agency can, in fact, correct a  
 6 typo, because I think there is case law on  
 7 that, is that what was being suggested?  
 8 **PRESIDING OFFICER:** Well, my  
 9 understanding was that Mr. McLeod had asked  
 10 Mr. Boese for an exhaust -- for are there  
 11 any regs that allow for modifications that  
 12 do not involve change applications, and  
 13 Mr. Boese was responding to that request  
 14 for information.  
 15 **MR. STUCKY:** Yeah.  
 16 **PRESIDING OFFICER:** Is that a fair  
 17 assumption, is that a fair description?  
 18 **MR. MCLEOD:** That's how I understand  
 19 it.  
 20 **MR. STUCKY:** Yeah.  
 21 **A.** And I guess I would note, the only reason I went  
 22 to the typos and omissions is because I believe  
 23 I -- I believe I mentioned that in my testimony  
 24 of things that could be corrected, so I thought  
 25 that was a point worth making, although I -- my

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1 take would be a typo or an omission doesn't need  
 2 a regulation to have to be corrected. That  
 3 was -- that was my -- that was my discovery.  
 4 And I'd be glad to -- I went over those  
 5 very fast. If we want to delve into any of  
 6 those, we can certainly discuss them. Like I  
 7 say, there's other penalties, violation orders,  
 8 I mean, I don't know, we could probably -- we  
 9 could probably -- you know, I don't know that we  
 10 want to go through the, I don't know, I think  
 11 we're close to 200 pages of rules and  
 12 regulations, statutes, I don't think -- I don't  
 13 think anybody wants to do that, including  
 14 myself, but we can if we would like to.  
 15 **PRESIDING OFFICER:** Mr. McLeod.  
 16 **BY MR. MCLEOD:**  
 17 **Q.** Let's go instead, Mr. Boese, to Exhibit 25.  
 18 **A.** Okay. Can I clarify one -- one thing that was  
 19 in my testimony earlier as far as my salary that  
 20 Mr. McLeod had asked me?  
 21 **PRESIDING OFFICER:** Oh.  
 22 **A.** Could I do that now at this time or later?  
 23 **PRESIDING OFFICER:** Well, go ahead.  
 24 **A.** Okay. You had asked me what my salary was, and  
 25 quite frankly, I didn't know the number when you

1 asked me, and I think I said it was a little  
2 more than 90,000, which would have been true  
3 prior to January 1st of this year. And my  
4 salary is, indeed, today 93,104 -- \$144.50 per  
5 year. I just recently signed a new contract, so  
6 I think I was still on my old number, which was  
7 just north of 90,000. So I wanted to go ahead  
8 and correct that for the record since you had  
9 asked me that and I may have not provided a  
10 detail in my answer that I intended.

11 **BY MR. MCLEOD:**

12 Q. Thank you, Mr. Boese. I don't know that we  
13 needed that degree of minutia because I think  
14 the over -- the overarching question is do you  
15 consider yourself to have independence from the  
16 District, are you an independent expert?

17 **A. What exhibit did you ask me to turn to?**

18 Q. Let's interject that last question --

19 **A. Oh.**

20 Q. -- that I asked before we turn to it. Do you  
21 consider yourself to be an independent expert?

22 **A. In relationship to?**

23 Q. The District?

24 **A. I was -- I'm not following your question, I  
25 don't think. Yes, I -- for this -- for this --**

1 **PRESIDING OFFICER:** Well, and the  
2 purpose of that question was, because I'm  
3 not real clear on that?

4 **MR. MCLEOD:** To get the witness's  
5 answer, which I think he provided.

6 **PRESIDING OFFICER:** Mr. Oleen.

7 **MR. OLEEN:** Well, I would weigh in,  
8 I do think there's a difference.

9 Mr. Stucky is trying to suggest that the  
10 situation between the two entities are the  
11 same, but Wichita's -- Wichita's agents,  
12 you know, they clearly have Wichita's  
13 interests solely -- Wichita's interests as  
14 their forefront, that's what they're trying  
15 to do is make beneficial changes for the  
16 City.

17 Mr. Boese has testified that he  
18 represents and is interested in groundwater  
19 for all water right owners, not just one or  
20 the other but all of them. I think as to  
21 his position, where he's supposed to have a  
22 broader scope of people in mind, I think,  
23 I'm not making insinuation myself but I  
24 think more of a question as to whether or  
25 not he's independent.

1 my testimony is related to my independent  
2 thoughts, not my board directing me to say  
3 something, is that where you were going with  
4 that?

5 Q. You can answer it that way.

6 **A. Yeah, these are -- these are my independent  
7 research and opinions based on the proposal and  
8 my knowledge and research --**

9 **MR. STUCKY:** I guess I'm going to  
10 object to the question, perhaps I don't  
11 understand it, but is there a distinction  
12 being drawn between a paid consultant for  
13 the City and a paid employee of the  
14 District and some insinuation that just  
15 merely because he's a paid employee of the  
16 District that he can't be an independent  
17 expert and opine in this case, is that what  
18 the insinuation is? And if that's the  
19 insinuation, then I'm going to object as to  
20 the form of the question.

21 **MR. MCLEOD:** I don't think there was  
22 any insinuation. It was just simply a  
23 question to the witness, whether he  
24 considered himself to be an independent  
25 expert.

1 **PRESIDING OFFICER:** Mr. Stucky.

2 **MR. STUCKY:** Before we proceed with  
3 this line of questioning, may I voir dire  
4 Mr. Henry as far as how many hundreds of  
5 thousands of dollars the City has spent on  
6 their consultants in this case, or if it  
7 approaches a million, whatever that number  
8 is, can I go ahead and voir dire one of the  
9 City's consultants on how much they've  
10 spent, one of the City's experts on how  
11 much they've spent on consultants in this  
12 case under that same line?

13 **PRESIDING OFFICER:** I think --  
14 Mr. Oleen.

15 **MR. OLEEN:** Mr. Boese is not a paid  
16 consultant. He listed a dollar figure in  
17 his expert report, but he's on salary to  
18 represent a certain global group of people.

19 **MR. STUCKY:** That's -- okay, I see  
20 the distinction. Whereas, the City's  
21 consultants are being paid to testify with  
22 a certain opinion, Mr. Boese is not being  
23 paid to testify. In fact, in that sense,  
24 he is giving an independent opinion. I see  
25 what's being said. I understand the

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1 distinction.  
 2 **PRESIDING OFFICER:** Okay. So was an  
 3 objection withdrawn?  
 4 **MR. STUCKY:** Yeah, objection  
 5 withdrawn.  
 6 **PRESIDING OFFICER:** Thank you.  
 7 **BY MR. MCLEOD:**  
 8 Q. And now, Mr. Boese, let's turn to that  
 9 Exhibit 25.  
 10 **A. Just so I'm clear, we're at the memorandum of**  
 11 **understanding between the District and the City**  
 12 **for ASR Phase I?**  
 13 Q. Right.  
 14 **A. Thank you.**  
 15 Q. And when you were testifying last, I'd asked you  
 16 about the District's position on passive  
 17 recharge credit, and since then Ms. Wendling and  
 18 I have both asked Mr. Pope about this same  
 19 document. And if you will look back to the  
 20 attachment A, do you see that that is kind of an  
 21 agreed list of recommendations that the District  
 22 would make to the DWR for purposes of the Phase  
 23 I permit adjudication in connection with the  
 24 Phase I MOU?  
 25 **A. Can you show me in the MOU where it references**

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1 **that attachment A so I can see under what**  
 2 **context attachment A was attached? Okay, I**  
 3 **think I actually found it, it's on page 4 of 4**  
 4 **under item 12, it said, it is agreed by the**  
 5 **parties that in addition to the above terms,**  
 6 **conditions, and commitments, the recommendations**  
 7 **of GMD2 on the project will be modified to**  
 8 **include the changes in attachment A, which is**  
 9 **part of -- hereof by reference. So I'm not sure**  
 10 **what your question was. These look like they**  
 11 **were modifications to the City's recommendation**  
 12 **of approval, because they're not an exhaustive**  
 13 **list. It starts with number 7, what it should**  
 14 **be worded as; 8, it says delete.**  
 15 **These look like they are modifications to**  
 16 **the City's original recommendation of approval**  
 17 **of the ASR Phase II applications that are**  
 18 **referenced above. That's the way I read that.**  
 19 **This is not an exhaustive list of the GMD's**  
 20 **recommendations that I -- the way I read it.**  
 21 **This was modifications to the recommendations**  
 22 **that were made by the Division of Water -- or by**  
 23 **the Groundwater Management District.**  
 24 Q. So would you agree, as Mr. Pope suggested, that  
 25 there was likely another separate document in

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1 which the District also had set forth some  
 2 recommendations?  
 3 **A. It would appear that that's what's intended**  
 4 **under this -- under this scenario that I think**  
 5 **most -- I would believe so. I mean, I don't**  
 6 **know why there would be modifications if there**  
 7 **wasn't an original list of conditions**  
 8 **recommended.**  
 9 Q. And have you seen the District's recommendations  
 10 on the Phase I permits, Mr. Boese, have you seen  
 11 and reviewed those?  
 12 **A. I have -- yeah, certainly, I've seen them, I**  
 13 **haven't reviewed them recently. But I -- I have**  
 14 **seen them.**  
 15 Q. Do you know in that -- in that larger set, in  
 16 that document of recommendations, was there any  
 17 recommendation from the District one way or the  
 18 other on passive recharge credits?  
 19 **A. I -- I don't recall, I'd have to retrieve that**  
 20 **document and review it to answer that question.**  
 21 **I'd be glad to do that if you would -- if you**  
 22 **want me to, but I don't have that document in**  
 23 **front of me. If you have the document in front**  
 24 **of me, I'd be glad to look at it.**  
 25 Q. I also don't. But if you would be willing to

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1 retrieve that document and provide that answer  
 2 to us, that would also be great. Mr. Boese --  
 3 **A. Can you hold on? I want to make a note or I'll**  
 4 **very likely forget what you just asked me to do.**  
 5 **And then I'll obviously want to consult with our**  
 6 **legal counsel, but I don't see a reason why I**  
 7 **couldn't. You're talking about the original**  
 8 **District recommendations?**  
 9 Q. On Phase I.  
 10 **A. I'm going to see if there happened to be a date**  
 11 **reference in the MOU as far as the date of**  
 12 **those, but I do not -- I don't see a date. But**  
 13 **I -- obviously there was probably a lot of --**  
 14 **the files are rather large, but I will do my**  
 15 **best to find that original --**  
 16 **MR. STUCKY:** Your Honor, I just  
 17 would like to speak to this briefly. At  
 18 some point asking Mr. Boese to do the  
 19 City's research for them is badgering this  
 20 witness. And at some point, I'm going to  
 21 object to that. Now, Mr. Boese in my view,  
 22 is as sharp as they come and is as  
 23 knowledgeable on these topics as they  
 24 possibly come, but to ask him to do all  
 25 kinds of additional research, I think

1 starts to cross the line.  
2 But with -- so to the extent it takes a  
3 ton of work on his part, he's already put  
4 tons of work into this case, he's gone  
5 above and beyond the call of duty. If it  
6 takes a limited amount of time, I'm not  
7 going to object, but anything that requires  
8 serious, serious research on Mr. Boese's  
9 part, I don't think is fair.  
10 **PRESIDING OFFICER:** I would tend to  
11 agree. I think in this case it sounds like  
12 it's good of you to be willing to find  
13 these things and it could be helpful and  
14 useful, but if it is an extensive  
15 investment of your time, then I don't think  
16 you're required to provide additional  
17 exhibits on behalf of the City. So let's  
18 be mindful of that going forward.  
19 **A. I would just go ahead and add to that, I'd be  
20 glad to look for it, I do believe -- well, I'm  
21 very, very confident that the City was copied on  
22 that letter, so I guess I would offer if the  
23 City cannot find that letter, I would be glad to  
24 do that for them. That original condition  
25 letter, I believe, I'm very, very confident the**

1 Q. I'll just ask the question generally. As far as  
2 you know, the District didn't make a  
3 recommendation on passive recharge credits one  
4 way or the other in the Phase I permit  
5 application; is that correct?  
6 **A. You're talking about a recommendation to the  
7 chief engineer in this respect?**  
8 Q. Yes.  
9 **A. I am unaware if they did or did not. But I  
10 would -- I would be glad to look.**  
11 Q. Thank you.  
12 **MR. MCLEOD:** And I will also say for  
13 the record at this point, Madam Chair, I  
14 don't believe that Counsel understands the  
15 concept of badgering a witness, and I have  
16 not been badgering any witness in these  
17 proceedings.  
18 **PRESIDING OFFICER:** Well, I'm not  
19 suggesting that anybody's been badgering,  
20 but I think we're relieving that now is  
21 you're no longer requesting him to find  
22 this and you're moving on?  
23 **MR. MCLEOD:** Correct.  
24 **BY MR. MCLEOD:**  
25 Q. Mr. Boese, does the District have a rule or

1 **City would have a copy of that -- that letter  
2 that Mr. McLeod is referring to.**  
3 **PRESIDING OFFICER:** So do you wish  
4 to have your people look for that, he's  
5 pretty confident that you have it?  
6 **A. Either -- either way.**  
7 **MR. STUCKY:** Yes, it's in their  
8 possession. Why -- why does my witness  
9 have to do their research for them? I  
10 don't understand that.  
11 **MR. MCLEOD:** I would have to say  
12 that really I fully expected the witness  
13 would know the answer to the question given  
14 everything else that he does seem to know  
15 about the ASR Phase I and Phase II projects  
16 and what he said about his level of  
17 participation in both projects. But I can  
18 just ask the question this way.  
19 **BY MR. MCLEOD:**  
20 Q. Mr. Boese, as far as you know, the District  
21 didn't make a recommendation either way on  
22 passive recharge credits in the Phase I permit  
23 application process, did it?  
24 **A. Are we still talking about in relationship to  
25 this original recommendation letter?**

1 regulation that requires that its staff approve  
2 groundwater modeling results prior to  
3 consideration of an application or proposal?  
4 **A. A specific regulation related to approving of a  
5 model?**  
6 Q. Yes.  
7 **A. Not -- no, not that I'm aware of.**  
8 Q. Does the District even have any rule or  
9 regulation that requires groundwater modeling  
10 for consideration of an application or proposal?  
11 **A. Again, specific just to a groundwater model?**  
12 Q. Yes.  
13 **A. No.**  
14 Q. In the District's past practice, has the  
15 District generally required applicants who come  
16 with a permit application or a change  
17 application to submit groundwater modeling in  
18 support of their application?  
19 **A. Generally, no, although we have requested on  
20 large, complex applications and projects to have  
21 modeling work done for review by the District in  
22 considering those applications. I think I  
23 already pointed out to the McPherson Board of  
24 Public Utility application, I think we, on a  
25 staff level, specifically requested some**

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1 groundwater modeling on that.  
 2 Q. For chlorides?  
 3 **A. I think that was at least one of the scopes. I**  
 4 **think we were also looking at sustainability of**  
 5 **that pumping in that area 'cause it was a very**  
 6 **large application. Mostly for chloride**  
 7 **movement, I believe, but I think there was**  
 8 **some -- at least some of the modeling was --**  
 9 **also included could the aquifer sustain that**  
 10 **amount of pumping, that focused pumping 2900**  
 11 **acre-feet in a very small area.**  
 12 Q. Have there been any approved multi-year flex  
 13 accounts within the District?  
 14 **A. Yes.**  
 15 Q. And did the District favorably recommend  
 16 approval on those?  
 17 **A. We have.**  
 18 Q. Are any of those within the areas that have been  
 19 identified as over-appropriated?  
 20 **A. Are you talking about just the Wichita well**  
 21 **field or we talking about any area in the Equus**  
 22 **Beds Aquifer that's over-appropriated?**  
 23 Q. Any area in the Equus Beds Aquifer that's  
 24 over-appropriated?  
 25 **A. I'm -- I'm sure there have been.**

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1 Q. Did the District evaluate domestic and  
 2 non-domestic well spacing for those multi-year  
 3 flex account applications?  
 4 **A. I believe at least on some or maybe all of them**  
 5 **I evaluated and run spacing evaluations, but I**  
 6 **would have to go back and look at those. But**  
 7 **the Board has waived, I believe, both spacing**  
 8 **and safe yield for the multi-year flex account**  
 9 **applications. And I'd have to, again, research**  
 10 **my notes on that. That was a board decision to**  
 11 **waive -- waive our regulations related, I**  
 12 **believe, to safe yield and spacing. Again,**  
 13 **I'm -- I'm going to preface by saying I believe;**  
 14 **I would have to go back and do some additional**  
 15 **research.**  
 16 **But also in that board motion, and I'm**  
 17 **going to again probably paraphrase it, I don't**  
 18 **want to be exact, the Board agreed to waivers on**  
 19 **those but also have an additional staff review**  
 20 **to determine if we saw any issues related to**  
 21 **that, that's why I paused slightly on the**  
 22 **spacing.**  
 23 **Obviously, if there's a -- a large pumping**  
 24 **well and a domestic well very close, I think we**  
 25 **would -- you know, on a staff level, we would**

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1 look at that and maybe raise some concerns.  
 2 **Perhaps a domestic well was drilled right next**  
 3 **to a large pumping well and then they had filed**  
 4 **a multi-year flex, term permit application, and**  
 5 **maybe it's, you know, a matter of feet away from**  
 6 **each other, we would -- we would review that.**  
 7 **We do review -- it's not a cursory, rubber**  
 8 **stamp, we're going to approve it because someone**  
 9 **filed a multi-year flex account. I do look at**  
 10 **every one of them, and I can't comment if I run**  
 11 **spacing evaluations on all of them, but I'm sure**  
 12 **I did on some of them that I had concerns about.**  
 13 Q. Were any of those -- of those permit approval  
 14 recommendations and waiver recommendations made  
 15 in the 2011 to 2012 drought period when the  
 16 streambeds were drying up?  
 17 **A. Boy, you're asking me to remember a long time**  
 18 **ago. The original concept of the drought term**  
 19 **permits, I don't remember what the staff level**  
 20 **of review of those was. I think the chief**  
 21 **engineer was -- was issuing those as sort of a**  
 22 **one-time issue. I don't necessarily recall**  
 23 **reviewing the drought term permits. Flex**  
 24 **accounts were being followed -- filed more**  
 25 **toward the end of 2012 when -- particularly when**

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1 **the drought extended.**  
 2 **When staff would have actually reviewed**  
 3 **those in relationship to the streamflow, I -- I**  
 4 **do not know. I mean, I think you're well aware**  
 5 **in 2013 we had a tremendous rainfall event and**  
 6 **the Big Ark and Little Ark went from very low or**  
 7 **no flow to extreme flooding situation. At what**  
 8 **time did the District receive those multi-year**  
 9 **flex account applications to actually review? I**  
 10 **would have to look. I anticipate some of those**  
 11 **would have come in after the summer, maybe all**  
 12 **of them, because as you know there was a huge**  
 13 **number of flex accounts filed throughout the**  
 14 **state so there was a backlog in DWR processing.**  
 15 **Most likely, I may have reviewed a lot of**  
 16 **those after, potentially after that rainfall**  
 17 **event. I -- you're asking me -- you know, I**  
 18 **reviewed -- I reviewed hundreds or perhaps a**  
 19 **thousand applications or more, and at what point**  
 20 **did I review a certain multi-year flex account**  
 21 **in relationship to streamflow is probably almost**  
 22 **an impossible question for me to answer at this**  
 23 **time.**  
 24 Q. Okay. As the District was recommending approval  
 25 of those multi-year flex accounts with spacing

1 waivers, did the District require that the  
2 applicants provide an MOU to guarantee that  
3 nearby domestic well owners would not be  
4 adversely impacted by those multi-year flex  
5 accounts?  
6 **A. No, they did not, but in the context of an MOU,**  
7 **they operate under a term permit with a much**  
8 **lower -- a much junior priority of their**  
9 **existing water right, so they would be obviously**  
10 **junior to anything else that's out there. In a**  
11 **multi-year flex account, the base water right is**  
12 **set aside and anything over the quantity of the**  
13 **authorized base right is then junior. So that**  
14 **additional withdraw would be junior, anything**  
15 **over the annual authorized quantity of the base**  
16 **water right.**  
17 Q. Did the District evaluate how any of those  
18 approved multi-year flex accounts might impact  
19 minimum desirable streamflow?  
20 **A. Not to my recollection.**  
21 Q. Mr. Boese, do you consider yourself to be an  
22 expert on water supply planning?  
23 **A. In what regard?**  
24 Q. Well, in, for example, the water supply planning  
25 needs of a city the size of the City of Wichita,

1 City's existing rights, I mean, the District's  
2 role in that respect passed when those rights  
3 were initially under consideration, didn't it?  
4 **A. Yes.**  
5 **MR. MCLEOD:** I don't have further  
6 questions for the witness.  
7 **A. Would it be possible for me to get a drink, a**  
8 **bottled water?**  
9 **PRESIDING OFFICER:** Yeah, sure.  
10 Mr. Oleen.  
11  
12 **CROSS-EXAMINATION**  
13 **BY MR. OLEEN:**  
14 Q. Mr. Boese, I believe the Phase II MOU that's  
15 previously been admitted or judicially noticed  
16 was GMD2 Exhibit 27, can you find that, please.  
17 **A. I'm there.**  
18 Q. My question to you is whether or not this Phase  
19 II MOU is still in force or whether or not it's  
20 expired? And I'll just ask you that question  
21 whether you know, and if not, I can direct you  
22 to some, perhaps, relevant language within it.  
23 But do you know whether or not this ASR Phase II  
24 MOU between Wichita and GMD2 has expired by its  
25 terms or not?

1 do you consider yourself an expert in water  
2 supply planning for a large municipality?  
3 **A. No.**  
4 Q. Do you know, Mr. Boese, does the District have  
5 any responsibility to define water supply  
6 planning and drought planning goals for the City  
7 of Wichita or its customers?  
8 **A. Any responsibility, is that what you said?**  
9 Q. Right.  
10 **A. No, we're on the -- we're on the supply side, I**  
11 **mean, we're reviewing applications based on**  
12 **their -- our rules and regulations in impact to**  
13 **the aquifer.**  
14 Q. And do your rules and regulations even give the  
15 Board any role in the City's water supply and  
16 drought planning exercises?  
17 **A. The District's maximum reasonable for beneficial**  
18 **use would apply to that, which basically**  
19 **describes how much a municipality can request on**  
20 **an application, the maximum quantity, so in that**  
21 **regard that would be the affirmative in that**  
22 **regard. But as far as determining how much the**  
23 **City needs, the City has to supply that**  
24 **information to the District for review.**  
25 Q. And in that context as to -- as to all of the

1 **A. I don't believe it's expired, but I haven't**  
2 **researched that extensively.**  
3 Q. So is it your belief that the MOU -- that the  
4 parties are still operating under this MOU?  
5 **A. That would be my -- that would be my take on it.**  
6 Q. I'll -- excuse me. I'll turn your attention to  
7 the very last page, and number 5 near the top,  
8 do you see where there's a reference to five  
9 years?  
10 **A. I do see that.**  
11 Q. So --  
12 **PRESIDING OFFICER:** I'm sorry, I'm  
13 not seeing what you're looking at?  
14 **MR. OLEEN:** Paragraph 5 on the last  
15 page of Exhibit GMD2 --  
16 **PRESIDING OFFICER:** I found it,  
17 sorry.  
18 **BY MR. OLEEN:**  
19 Q. So --  
20 **MR. STUCKY:** Can you give us a  
21 moment to get there?  
22 **MR. OLEEN:** Paragraph 5, Counsel, on  
23 the last page of GMD2 Exhibit 27.  
24 **A. May I help Mr. Stucky?**  
25 **PRESIDING OFFICER:** Yes, you can



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1 help him.  
 2 **BY MR. OLEEN:**  
 3 Q. So I guess my question to you, Mr. Boese, if  
 4 you'd read that number 5 to yourself, and my  
 5 question is just do you still believe that this  
 6 MOU is in force between the GMD and the City of  
 7 Wichita?  
 8 **A. Well, I do but I would note that I'm an expert**  
 9 **in water law and regulations, I'm not an expert**  
 10 **in contracts and MOUs, so I would probably need**  
 11 **to defer to our attorney to answer that. And I**  
 12 **think we could -- if you want to request that he**  
 13 **come answer that.**  
 14 **MR. STUCKY:** Yeah, I --  
 15 **A. I'm not an expert in contracts and MOUs as far**  
 16 **as law.**  
 17 **MR. STUCKY:** I guess I'll lodge an  
 18 objection for the record. I think my  
 19 witness is as qualified as they come as far  
 20 as rendering opinions on interpretation of  
 21 language in contracts and statutes and  
 22 regulations, so I'm going to allow my  
 23 witness to answer, but I'll just lodge an  
 24 objection for the record that it does call  
 25 for a legal conclusion that would be well

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1 within the province of lawyers to be  
 2 briefing in this case.  
 3 **MR. OLEEN:** I note Counsel's  
 4 interesting objection on the issue of legal  
 5 conclusions. I also note Mr. Boese's  
 6 expert report where he said he provides  
 7 legal advice.  
 8 **BY MR. OLEEN:**  
 9 Q. But my question --  
 10 **A. I guess I'll answer the question, I believe it's**  
 11 **still in effect because I don't see anything on**  
 12 **number 5 that says if the review is not done,**  
 13 **this MOU terminates.**  
 14 Q. Okay.  
 15 **A. So I don't -- I mean, unless you can show me**  
 16 **something that says if number 5 is not performed**  
 17 **that the MOU automatically terminates, I**  
 18 **would -- my take would be it's still in effect.**  
 19 Q. Okay, thank you. And is it your nonlegal  
 20 opinion, notwithstanding what legal advice you  
 21 may or may not give, is it your nonlegal opinion  
 22 that this MOU and the conditions therein,  
 23 assuming it is still in force, that these terms  
 24 are as enforceable as conditions that are made  
 25 part of some water permit?

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1 **A. Yes, to the extent that an MOU can be -- can be**  
 2 **enforced, I think probably only by suitable**  
 3 **action, but, yes, in that respect.**  
 4 Q. Turning back to the issue of MDS, when you were  
 5 first cross-examined by Mr. McLeod, and I know  
 6 we've had some intervening witnesses since then,  
 7 but I wrote down that he had asked you whether  
 8 in the course of your extensive review for GMD2  
 9 of applications, which you said were in the  
 10 hundreds and perhaps a thousand or so, right?  
 11 **A. Yes.**  
 12 Q. He asked you if you had ever -- if the GMD2 had  
 13 ever made an MDS analysis with respect to such  
 14 applications that you would review and provide  
 15 recommendations for; is that correct?  
 16 **A. I believe there was a line of questioning to**  
 17 **that. And if -- are you going to tell me what**  
 18 **my answer was?**  
 19 Q. Well, yeah, I wrote down, not that I ever  
 20 recall, that's what I wrote down in response to  
 21 the question.  
 22 **A. Yeah, and now that you have reread that, if that**  
 23 **was my response, I would like to correct the**  
 24 **record in that regard if I could.**  
 25 Q. So now you do recall making some MDS analyses in

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1 conjunction with change or new permit  
 2 applications --  
 3 **A. Well --**  
 4 Q. -- that you had reviewed?  
 5 **A. Yes, actually. And -- and as far as I think**  
 6 **maybe Mr. McLeod's question was did we consider**  
 7 **it in review, I don't know if he used the word**  
 8 **analysis, but I would like to correct the record**  
 9 **on that, I think, if that is okay with you,**  
 10 **Ms. Owen.**  
 11 Q. Yes, I want you --  
 12 **A. So --**  
 13 Q. -- to provide accurate information, please.  
 14 **A. So I'm thinking about the Bentley reserve well**  
 15 **field for the City of Wichita, and four of those**  
 16 **are bank storage wells; and this is not related**  
 17 **to this project just so we're clear, I don't**  
 18 **recall the file numbers. Anyway, they're very**  
 19 **similar to the ASR Phase I file is why I don't**  
 20 **remember, I think they're -- well, anyway,**  
 21 **maybe -- maybe I shouldn't go there. I think**  
 22 **they're 45,296 through 45,301, but I could be**  
 23 **wrong.**  
 24 **There was an MDS consideration on what the**  
 25 **flow triggers would be on the Big Arkansas River**

1 for operation of bank storage wells, and we did  
2 review that on a staff level and make some  
3 suggestions and recommendations. There was a  
4 lot of, I think, back and forth, I wouldn't say  
5 adversarial at all, with the City of Wichita and  
6 DWR and figuring out what the MDS -- or what the  
7 minimum flow trigger should be in the Big  
8 Arkansas River to operate those bank storage  
9 wells. And if memory serves me right, the City  
10 had suggested an 80 percent exceedance rate,  
11 DWR, I think had went to a 90 percent exceedance  
12 rate, and then eventually the flow trigger for  
13 the Big Arkansas River, I believe, ended up  
14 being 165 cubic feet per second.

15 Again, this was ten -- this was awhile ago,  
16 but that certainly had a minimum desirable  
17 streamflow. And I want to clarify while I'm  
18 having some memory now of why that was  
19 considered because --

20 Q. I thank you for your clarification, Mr. Boese --  
21 A. Okay.

22 Q. -- and for purposes of my questioning, that's  
23 sufficient.

24 A. Well, I --

25 Q. To be clear, your previous -- to your

1 that could be probably plus or minus five years  
2 or more, the Groundwater Management District  
3 No. 2 established base flow nodes on the Little  
4 Arkansas River, as well as the north fork of the  
5 Ninnescah and certain tributaries, to account  
6 for the loss from the aquifer into those streams  
7 and rivers. So there was a base flow allocation  
8 established.

9 I vividly remember doing streamflow  
10 measurements with Kansas Water Office, DWR, and  
11 the reason I remember is because it was very  
12 cold standing in the north fork of the Ninnescah  
13 doing streamflow measurements by hand. So we  
14 established base flow nodes on the Little  
15 Arkansas River, since that's the area we're  
16 taking about, to account for that loss from the  
17 aquifer into the river. And we can go into  
18 detail how that's done, it's in our safe yield  
19 regulation. And we also note spacing to those  
20 river nodes, they're part of our well spacing  
21 regulation.

22 So any application that is near the Little  
23 Arkansas River, or if you remember the safe  
24 yield two-mile-radius circle that intersects  
25 Little Arkansas River, those river nodes are

1 recollection, your previous consideration of an  
2 MDS issue in conjunction with a new or change  
3 app was also with the City of Wichita, correct?  
4 A. Yes, but, you know, I'd like to maybe expand  
5 maybe on my answer outside of the Bentley  
6 reserve field.

7 Q. Well, and I'm only cutting you off because I'm  
8 more interested in for whom you are considering  
9 this issue so --

10 A. Well, my other ones were not with the City of  
11 Wichita is why -- you made that point, and I  
12 wanted to also discuss other ones.

13 Q. Other non-municipalities -- other owners of --  
14 let me rephrase that better. Other owners of  
15 water rights -- or water permits, I should say,  
16 that are not municipal permits, have you ever  
17 considered the MDS issue in the context of  
18 irrigation water permits, for example? That's  
19 my question.

20 A. And this is going to take me a little while to  
21 answer, but I think it's an important -- an  
22 important point. The Groundwater Management  
23 District - and I can't point to the date; if I  
24 had some time to do some research, I could do  
25 it - I would say roughly 20 years ago, again,

1 accounted for in the safe yield. And also,  
2 likewise, the spacing evaluation, they must  
3 maintain -- new applications or a change in  
4 point of diversion greater than 300 feet must  
5 maintain a quarter mile spacing to the Little  
6 Arkansas River. So in that regard, any  
7 application that is near the river has a  
8 component of MDS in it, of streamflow in it, so  
9 there is some -- some certain review and  
10 protection for that streamflow.

11 Q. So a component, I heard you say, but here today  
12 we're talking about the City's proposal, and let  
13 me find out where it says it in your expert  
14 report. I'm going to read from page 5 of your  
15 expert report, the bottom of the -- of the page,  
16 the last sentence of the first full paragraph,  
17 most certainly, MDS would be negatively impacted  
18 by the proposal and this should be further  
19 evaluated. And isn't it true that you're  
20 claiming that some sort of detailed MDS analysis  
21 should be done with respect to the City's  
22 proposal, correct?

23 A. I believe the City should evaluate the impact of  
24 their proposal both to the aquifer maintenance  
25 credits that would allow additional withdrawal

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1 and the lowering of the minimum index level, it  
 2 should be evaluated what the impact is on  
 3 minimum desirable streamflow. We have made  
 4 steps to protect the streamflow with those base  
 5 flow nodes and spacing. Likewise, this should  
 6 also protect that streamflow.  
 7 Q. You've -- you have these nodes, which I don't  
 8 fully understand, but I know that nodes aren't a  
 9 dedicated analysis like I understand you're  
 10 saying needs to be done here. But my question  
 11 to you, then, is the next time an irrigator  
 12 comes to your office and says, I need help with  
 13 this new or change application, Mr. Boese, you  
 14 testified that you sometimes assist people  
 15 within the District with initially getting this  
 16 application process started and sent to DWR,  
 17 eventually you're given the opportunity to make  
 18 a recommendation on that new application or  
 19 change application, right?  
 20 **A. Yes.**  
 21 Q. And so the next time an irrigator comes into  
 22 your office and you know that they're getting  
 23 ready to apply for a new appropriation or  
 24 they're going to submit a change application,  
 25 ultimately when that comes to you for the GMD2's

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1 review and this is some application in the Equus  
 2 Beds Aquifer, you're going to be asking DWR or  
 3 recommending to DWR that an MDS analysis be  
 4 conducted. Is that your testimony?  
 5 **A. Well, I think you're really mixing two different**  
 6 **sort of -- two sort of issues. And I take a**  
 7 **little bit of exception to you referencing an**  
 8 **irrigator because we help other folks too, but**  
 9 **I'll -- I'll let that pass, I mean --**  
 10 Q. I'll say another one, a recreation --  
 11 **A. Sure.**  
 12 Q. -- applicant or thermal exchange.  
 13 **A. Right.**  
 14 Q. What I want to know is you're apparently asking  
 15 for a further full-blown -- a significant  
 16 analysis, as I understand it, and -- would you  
 17 agree you're asking for some sort of dedicated  
 18 MDS analysis that Wichita perform regarding MDS  
 19 impacts?  
 20 **A. Yes.**  
 21 Q. Right?  
 22 **A. Yes, because this area is over -- very**  
 23 **over-appropriated, and if you'd let me finish --**  
 24 Q. Well --  
 25 **A. -- when an irrigator or someone else files an**

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1 application, I review it. That safe yield,  
 2 which includes those river nodes and that  
 3 spacing, is setting aside that water for  
 4 streamflow, it's being done through our  
 5 regulation. My safe yield doesn't apply to  
 6 aquifer storage and recovery wells, although  
 7 strongly in my opinion it does for AMCs. That  
 8 base flow node would be considered in a safe  
 9 yield evaluation for an irrigator, a  
 10 recreational, or the City in respect to these  
 11 **AMCs also. That component is in there.**  
 12 Q. So as I understand your testimony, you are  
 13 saying that in my question about the next time  
 14 DWR is presented with a review of an application  
 15 for a new appropriation or change application  
 16 and it's some other type of beneficial use other  
 17 than municipal, you're saying you do not think  
 18 DWR should be performing the type of MDS  
 19 analysis that you think today should be  
 20 performed with respect to Wichita's proposal?  
 21 **A. I didn't follow your question. My**  
 22 **recommendation was that MDS be evaluated, and**  
 23 **you just said DWR. I -- I didn't follow the**  
 24 **question, can you -- can you rephrase it?**  
 25 **MR. STUCKY:** At the very least, I am

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1 going to object as misstates the witness's  
 2 testimony, I think at the very least.  
 3 **A. Perhaps it -- well, I'm not going to say**  
 4 **anything.**  
 5 **BY MR. OLEEN:**  
 6 Q. I will try to rephrase.  
 7 **PRESIDING OFFICER:** Can you try?  
 8 **MR. OLEEN:** Yeah.  
 9 **BY MR. OLEEN:**  
 10 Q. Here today, the Wichita proposal, you think --  
 11 do you think some sort of MDS analysis needs to  
 12 be done?  
 13 **A. I think the impacts to many things, including**  
 14 **MDS --**  
 15 Q. Yes or no, do you think MDS analysis should be  
 16 done, am I not understanding your report  
 17 correct?  
 18 **A. An impact to minimum desirable streamflow, an**  
 19 **evaluation should be done for this proposal,**  
 20 **absolutely, I -- that is my statement.**  
 21 Q. Okay. But you are not saying that the same type  
 22 of analysis should be done if there is in the  
 23 future some other applicant for some other  
 24 beneficial use in this area and you're  
 25 presented -- well, yeah, that's it, you're not

1 saying that that similar type of analysis should  
2 be done with respect to a future different type  
3 of beneficial use application in this area?  
4 **A. I believe our safe yield and our spacing**  
5 **regulation takes care of that. And I would do**  
6 **that same for the City if they filed an**  
7 **application, I would do that same safe yield and**  
8 **spacing evaluation for anybody, if that's your**  
9 **question. That -- that eliminates the need for**  
10 **the -- this detailed MDS because the safe yield**  
11 **and the spacing helps protect that. If you're**  
12 **implying that I should perform a safe yield and**  
13 **spacing for the City's AMCs, I kind of did that**  
14 **already, and none of them meet safe yield.**  
15 Q. Okay. I'll move on away from MDS. You say in  
16 your expert report, also on the bottom of  
17 page 5, it says, certainly - there's a lot of  
18 certainlies in here - this says, certainly, the  
19 lowering of the minimum index levels and  
20 allowing the City to pump the aquifer below the  
21 current minimum index levels will increase the  
22 hydraulic gradient and increase the migration of  
23 the salt contamination.  
24 **A. I believe there's studies that have shown that,**  
25 **both USGS, Mr. Romero's showed that, increasing**

1 **the hydraulic gradient, lowering the water table**  
2 **causes chloride movement, and I believe an**  
3 **evaluation should be performed in regard to this**  
4 **application.**  
5 Q. Okay.  
6 **A. Or this proposal.**  
7 Q. And my question for you is one that I think I  
8 also asked of Mr. Romero, and that is isn't it  
9 true that any reduction of the water level  
10 beyond de minimis technically increases the  
11 hydraulic gradient, can you agree with me that  
12 that's a generally fair statement?  
13 **A. A reduction at one location compared to another,**  
14 **yes; if -- if the entire aquifer in the area**  
15 **drops, there is no change in hydraulic gradient.**  
16 **If one area drops more than the other, then**  
17 **there is a change in hydraulic gradient.**  
18 Q. Thank you, yes, I understand, I should have --  
19 **A. That's okay.**  
20 Q. That's a good point. So currently, Wichita, if  
21 they're pumping in the aquifer, whether it's  
22 their native water rights or it is -- they're  
23 withdrawing recharge credits, and in relation to  
24 nearby areas that may not be pumping, if Wichita  
25 is exercising their current water rights in the

1 well field, it is going to increase the  
2 hydraulic gradient, correct?  
3 **A. Yes, if they're lowering the water table more**  
4 **than it's being lowered adjacent to it, the**  
5 **hydraulic gradient will change.**  
6 Q. And back to your report, you say that, and I'll  
7 paraphrase, lowering the minimum index levels,  
8 allowing Wichita to pump the aquifer below the  
9 current minimum index levels, below the current  
10 bottoms, will increase the hydraulic gradient,  
11 right?  
12 **A. Yes.**  
13 Q. Okay.  
14 **A. Yeah, I mean, unless -- unless every adjacent**  
15 **area is also pumping that additional quantity,**  
16 **which obviously cannot occur, I don't think,**  
17 **so ...**  
18 Q. Okay. Well, if water levels -- so you're saying  
19 if Wichita pumps below the current bottoms, that  
20 has the potential, in relation to other areas,  
21 to increase the hydraulic gradient, right?  
22 **A. If the water table is lowered below the current**  
23 **1993 levels, whether it's the City pumping or**  
24 **anybody else's pumping, the hydraulic gradient**  
25 **will --**

1 Q. Thank you, that was the next question I wanted  
2 to flush out. So if irrigators or any other  
3 water right owners in the well field, if they're  
4 pumping below the current bottoms, that's going  
5 to increase the hydraulic gradient too, isn't  
6 it?  
7 **A. As I think I previously stated if the water**  
8 **table drops in relationship to the area**  
9 **adjacent, the hydraulic gradient will -- will**  
10 **change.**  
11 Q. Right, and so those -- those -- let's assume  
12 with me that Wichita is not withdrawing water  
13 below the current bottoms but other users are,  
14 they will be increasing the hydraulic gradient,  
15 as you said, and isn't it true that they are --  
16 their activity could increase the migration of  
17 the salt contamination?  
18 **A. I think I previously stated if the water level**  
19 **drops, whatever causes it, then the hydraulic**  
20 **gradient will change, so whether it's cumulative**  
21 **pumping of the City and irrigation, if it's the**  
22 **City by itself. However, the -- the City**  
23 **pumping recharge credits would also lower that**  
24 **water table, and particularly if we're pumping**  
25 **AMCs where water was not added to the system,**

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1 **that would certainly change the hydraulic**  
 2 **gradient.**  
 3 Q. But -- so you argue saying that there is some  
 4 additional hydraulic gradient, chloride  
 5 migration concern for the City to be able to  
 6 withdraw water below the current bottoms. Is  
 7 that what you're saying?  
 8 **A. Is there some additional? Did you say -- did**  
 9 **you say the word additional?**  
 10 Q. Yes. Because that's -- they're currently not  
 11 allowed to withdraw credits below the current  
 12 bottoms, right?  
 13 **A. Yes.**  
 14 Q. They want to be able to withdraw credits --  
 15 **A. Right.**  
 16 Q. -- from the lower bottom, right?  
 17 **A. Yes.**  
 18 Q. And you're saying allowing them to withdraw  
 19 credits from a lower bottom has this hydraulic  
 20 gradient, chloride migration risk, right?  
 21 **A. Yes.**  
 22 Q. And so you don't want Wichita to be able to  
 23 withdraw recharge credits from lowered bottoms,  
 24 right?  
 25 **A. Well, the -- the ASR project, when it was**

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1 **established, establishes this area that the City**  
 2 **could place water into and use.**  
 3 Q. Right, and you don't want that area to be  
 4 lowered because of concerns you have about  
 5 increased hydraulic gradient and chloride  
 6 migration risks, correct?  
 7 **A. Well, I want to make it clear, me not wanting**  
 8 **something, I think you've said I don't want them**  
 9 **to.**  
 10 Q. When I say that, I mean it's your, I guess -- I  
 11 guess it would be the GMD's recommendation that  
 12 that not be permitted, right?  
 13 **A. Not without a thorough evaluation of the impacts**  
 14 **to other users, MDS, and water quality.**  
 15 Q. Okay. But you're not advocating that somehow  
 16 other water right owners that might want to pump  
 17 below current bottoms -- let's say the water  
 18 level gets down to the current bottom.  
 19 **A. Uh-huh.**  
 20 Q. You're not advocating that those other water  
 21 right owners should somehow be prevented from  
 22 being able to withdraw water when the water  
 23 level is at the current bottoms?  
 24 **A. It wasn't a condition of their original**  
 25 **approval, unlike the ASR Phase II and Phase I**

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1 **where it was a condition of their original**  
 2 **approvals. So that's a distinction to make**  
 3 **there.**  
 4 Q. Okay. But -- so you're saying because they're  
 5 not subject to a condition, you think it's okay  
 6 for them to withdraw water if water levels are  
 7 at the 1993 levels, right?  
 8 **A. Unless they're causing impairment, yes.**  
 9 Q. Okay. But we talked before about some chloride  
 10 concerns?  
 11 **A. Uh-huh.**  
 12 Q. And so you're saying you have -- you have  
 13 chloride concerns if Wichita withdraws water  
 14 below the bottom, but you don't have chloride  
 15 concerns if other water right owners are  
 16 withdrawing water when the water level is at the  
 17 1993 levels?  
 18 **A. Well, I have concerns for all the water quality**  
 19 **in the District. If -- if we see that there's a**  
 20 **special management area needed to address that,**  
 21 **then I will take that to my board. We did that**  
 22 **with the Burrton Intensive Groundwater Use**  
 23 **Control Area. So if I see a need because of**  
 24 **this saltwater intrusion from the Burrton area**  
 25 **or from the Arkansas River, then we're going to**

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1 **have to evaluate how we deal with that, whether**  
 2 **it's an Intensive Groundwater Use Control Area,**  
 3 **a local enhanced management area, a special**  
 4 **water quality use area, anything is on the table**  
 5 **of that, which -- which could, you know, include**  
 6 **some recommendations or corrective control**  
 7 **provisions to deal with that issue.**  
 8 **You're getting way out on a hypothetical, I**  
 9 **mean, we haven't evaluated that. Will we have**  
 10 **to some day? If the chlorides continue to**  
 11 **advance, then we've already got a recommendation**  
 12 **out there to expand the IGUCA boundaries on the**  
 13 **table right now. We haven't -- we haven't gone**  
 14 **any further, but there's already the discussion**  
 15 **of expanding the Burrton IGUCA boundaries. And,**  
 16 **actually, the chief engineer recently -- recent**  
 17 **order on the IGUCA hearing for the Burrton area**  
 18 **also included that recommendation that the IGUCA**  
 19 **boundaries be expanded.**  
 20 **So as those chlorides advance, you know,**  
 21 **there's corrective control provisions that may**  
 22 **have to be considered. We're not there -- you**  
 23 **know, we're not at that point yet today, but**  
 24 **those might have to be considered. Those could**  
 25 **include anything on the table.**

1 Q. Do I understand correctly that under the current  
2 ASR permits there are conditions that require  
3 water quality -- water quality monitoring for  
4 purposes of chloride contaminations?

5 **A. There's water quality monitoring required. I  
6 don't know that it was necessarily specific to  
7 chloride movement, but it was also to look at  
8 the impacts of injecting this different source  
9 of water into the aquifer, how that changed the  
10 geochemistry of the aquifer. You put in -- I'm  
11 not a geochemist, but you put in oxygenated  
12 water, it does certain things, so you have to  
13 look at all -- all that.**

14 Q. Do the other -- do the other -- the other water  
15 right permits, certified water rights or permits  
16 that are in the well field, do they generally  
17 also have water quality monitoring conditions on  
18 those permits or water right certifications?

19 **A. There are many that do. And I can describe  
20 those in detail if you'd like. We just talked  
21 about the Burrton Intensive Groundwater Use  
22 Control Area, all permits that have been  
23 approved since the IGUCA went into effect do  
24 have a water quality monitoring requirement as  
25 recommended by the -- by the GMD, including also**

1 **A. Okay.**

2 Q. If the aquifer is kept full, would you agree  
3 with me that generally there's less chance for  
4 impairment?

5 **A. Well, a full aquifer generally would -- would  
6 there be less chance of impairment, although I'm  
7 a little concerned with the term full because  
8 you can't have an unreasonable lowering and  
9 raising of the water table so --**

10 **MR. STUCKY:** Can I just ask for one  
11 clarification? Mr. Oleen did this to me a  
12 lot, so I'm going to ask for one  
13 clarification, impairment in the context of  
14 what, what kind of impairment are we  
15 referring to here?

16 **MR. OLEEN:** Well, I would like it to  
17 be the legal -- the legal version.

18 **MR. STUCKY:** Yeah, but the testimony  
19 from the -- testimony prior was that  
20 there's impairment to individual wells and  
21 there's also impairment to water levels in  
22 the aquifer, there's two different  
23 regulations that this witness has  
24 identified, so --

25 **MR. OLEEN:** So he can tell me

1 **in the special water quality area to the north;  
2 the Hollow-Nikkel also has those requirements.  
3 We require that on a number of permit  
4 applications in the Pretty Prairie and Partridge  
5 area, have water level and water quality  
6 monitoring. So there are -- there are many.**

7 **Most of those are irrigation, some are --  
8 there's at least one other municipal. There's  
9 some recreational permits. So there are many, I  
10 don't have the number in front of me, that have  
11 water quality monitoring component to their  
12 permit conditions as recommended by the GMD.**

13 Q. Switching gears now, I believe Mr. McLeod also  
14 had asked you if the aquifer is kept full, are  
15 there no or less MDS concerns and are there no  
16 or less chloride concerns. Do you remember that  
17 line of questioning?

18 **A. Are there no or less, what -- what did you mean  
19 by no or ...**

20 Q. Well, I don't remember exactly --

21 **A. Okay.**

22 Q. -- whether he said there would be no such  
23 concerns. I'll -- I don't -- I'll forget

24 whatever he asked you, I'll ask you what I want  
25 to ask you.

1 which -- either one.

2 **MR. STUCKY:** Okay.

3 **BY MR. OLEEN:**

4 Q. If the aquifer is kept the fullest that it  
5 reasonably is, pick a percentage, 90 something,  
6 and it's intended to be a simple question, is  
7 there generally less concern for impairment, and  
8 I mean the legal impairment as you understand it  
9 and use it within your world, GMD2 world, legal  
10 impairment of any kind, is there less concern  
11 for that?

12 **A. In the case of when the aquifer is maintained in  
13 a fuller -- fuller state?**

14 Q. Yes.

15 **A. We're talking about always maintained in a  
16 fuller state or when the -- also included when  
17 the aquifer has been drawn down by pumping of --  
18 by the City or anyone else? When it's -- when  
19 it's fuller, I agree; when it's not fuller, I --  
20 you said maintained, so by maintain, I assume  
21 you meant always. If it always stays full,  
22 sure, but I don't -- I don't think that's a  
23 possible situation in this scenario.**

24 **MR. STUCKY:** I'm sorry, I apologize,  
25 Madam Hearing Officer, is the question

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1 whether or not it would be beneficial if  
 2 the City never pumps any of their water  
 3 rights in the future and there's a benefit  
 4 in always keeping the aquifer full in that  
 5 context, is that the question? I'm trying  
 6 to understand.  
 7 **MR. OLEEN:** That's not my question,  
 8 Mr. Stucky can ask his questions.  
 9 **BY MR. OLEEN:**  
 10 Q. My question, which I'll try again, it's intended  
 11 to be simple, which it is, again, if the aquifer  
 12 is full and it is not being -- no water is being  
 13 withdrawn from it, is there less chance for  
 14 impairment in all the legal senses?  
 15 **A. If there was no water being impaired, there's no**  
 16 **chance anybody can be impaired, but I'll -- I'll**  
 17 **maybe skip over that because you said if there's**  
 18 **no water being withdrawn, I don't -- there**  
 19 **couldn't be impairment because there's no water**  
 20 **being withdrawn but -- by anybody else; there**  
 21 **would be no -- there would be no one claiming**  
 22 **water.**  
 23 **But if the water table would -- our goal at**  
 24 **the Groundwater Management District is to keep**  
 25 **the aquifer at a sustainable level, so in that**

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1 **regard, if the aquifer is full or near full, or**  
 2 **whatever term you use, and it stays there, that**  
 3 **would be a good thing, if it stays there.**  
 4 **And -- yeah, I'll leave it at that.**  
 5 Q. I only got one more question and I think  
 6 Mr. McLeod asked -- excuse me, I'm sorry, my  
 7 voice. I think Mr. McLeod asked this question,  
 8 I don't recall you actually answering it,  
 9 though, and it's similar to -- well, I'll just  
 10 ask it. So you -- you're familiar with the  
 11 City's proposal, and I understand you may  
 12 disagree as to whether they have considered all  
 13 the reasonable options for the drought planning  
 14 that they are wanting to undertake, okay, I  
 15 understand that. My question to you is if, as  
 16 Wichita says, the choice is to pump water levels  
 17 down from the aquifer in order to create space  
 18 in which to physically inject water to  
 19 accumulate recharge credits, if that's option  
 20 one, and option two is for Wichita to generally  
 21 leave the aquifer full but accumulate AMCs in a  
 22 manner in which they're requesting under the  
 23 proposal, which is preferable to you?  
 24 **A. What's preferable to me is what's allowed under**  
 25 **the Kansas Water Appropriation Act and the rules**

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1 **and regulations of the Groundwater Management**  
 2 **District and the Division of Water Resources.**  
 3 Q. And so using those qualifications that you just  
 4 stated, which scenario is more preferable to  
 5 you, scenario one or scenario two?  
 6 **A. Well, I don't support, and my board and myself**  
 7 **have made that clear, I don't support the City**  
 8 **purposely pumping down the aquifer, but if**  
 9 **that's their choice, that's what's allowed by**  
 10 **law, then that's -- that's what they can do.**  
 11 **MR. OLEEN:** Thank you, I don't have  
 12 any further questions.  
 13 **PRESIDING OFFICER:** Ms. Wendling.  
 14  
 15 **CROSS-EXAMINATION**  
 16 **BY MS. WENDLING:**  
 17 Q. I lost track of what day it was, but when you  
 18 started your direct, we went through your CV, as  
 19 you recall, which is 80 -- I'm sorry, I forgot  
 20 to write it down, is it 83, I think, District  
 21 Exhibit 83, and if you need to refer to it.  
 22 **A. It is labeled as 83.**  
 23 Q. Okay. You mentioned on the back side, it talks  
 24 about your committees, and you said City of  
 25 Wichita committee, could you touch on a couple

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1 of your -- your experience and some of the other  
 2 committees you served on outside of working with  
 3 the City?  
 4 **A. Oh, yeah, I guess maybe we didn't discuss those**  
 5 **now that you say that. Well, I've got the CV in**  
 6 **front of me, so maybe we'll just -- I can run**  
 7 **through them. I'm currently on the Kansas**  
 8 **Corporation Commission Oil & Gas Advisory**  
 9 **Committee. Been on that committee for -- oh, my**  
 10 **gosh, I'm going to say probably since 2000 or --**  
 11 **2007 or 2008, but I'm not -- I don't recall**  
 12 **entirely.**  
 13 **That's a -- that's an advisory committee to**  
 14 **the Kansas Corporation Commission Conservation**  
 15 **Division. We meet roughly quarterly or so, or**  
 16 **more as needed, to discuss issues with the oil**  
 17 **and gas industry and the conservation. I'm on**  
 18 **that because I'm the Groundwater Management**  
 19 **District representative. So we -- we discuss --**  
 20 **my role in that would be to ensure that any**  
 21 **activities, new rules and regulations, new**  
 22 **things that are coming down the pike, or I guess**  
 23 **old rules and regulations dealing with oil and**  
 24 **gas, protect the groundwater quality.**  
 25 Q. Is that so we can avoid more chloride plumes?

1 A. Well, I mean, that's certainly -- I mean, that's  
2 certainly some of the things we look at.  
3 Q. Okay.  
4 A. I mean, I -- we're actively involved in that  
5 committee about making sure that abandoned oil  
6 and gas wells are properly plugged. We just  
7 went through a review process of the rules and  
8 regulations dealing with the funding program for  
9 abandoning -- or for properly plugging some of  
10 these, I guess I'll call them orphaned,  
11 abandoned oil and gas wells that are out there.  
12 So served on that committee for a long time.  
13 There's other agencies and other folks involved  
14 on that committee, KDHE, I believe DWR has a  
15 representative, the oil and gas industry has a  
16 representative.  
17 I'll move on down to the NRCS Kansas  
18 Technical Committee, I've been on that for -- I  
19 think, at least, since I've been -- probably  
20 since I've been manager. That advises the NRCS.  
21 I'm on their technical committee, so when we're  
22 looking at things like federal funding and what  
23 qualifications have to be met for, let's say,  
24 EQIP funding and those kind of things, making  
25 recommendations to the local NRCS folks.

1 They're headquartered in Salina, so we meet a  
2 few times a year on that. Been involved with  
3 that for -- for sometime.  
4 The District had a special program that got  
5 approved from NRCS years ago, which is not  
6 necessarily related to my time on the technical  
7 committee, but we had a -- some federal dollars  
8 involved to help convert irrigation from less  
9 efficient to more efficient. That was all sort  
10 of the component of that technical committee  
11 on -- on setting those standards and  
12 stipulations on how that money gets -- gets  
13 funneled to appropriate producers.  
14 We already talked about the two -- or the  
15 Wichita Water ASR Executive Oversight Committee  
16 and the Water Utilities Advisory Committee so  
17 I'll skip over those.  
18 I served on the Sedgwick County Stormwater  
19 Technical Advisory Committee. That committee is  
20 no longer in place. Sedgwick County was looking  
21 at stormwater regulations. I served on that  
22 committee as the local groundwater management  
23 expert, I guess, so to speak. That looked at --  
24 as they were drafting those rules and  
25 regulations dealing with stormwater management.

1 Of course, in Sedgwick County, we've seen a lot  
2 of development, housing developments and such,  
3 and what do you do with the stormwater runoff  
4 when you're -- when you are building new  
5 subdivisions or housing divisions or business --  
6 business areas. My role on that was advisory,  
7 with our concern of -- primarily of discharging  
8 into groundwater pits of stormwater runoff; that  
9 was my main focus on that committee.  
10 I think I -- I have to think back on that,  
11 one of the interesting things was that the  
12 committee or the Sedgwick County folks wanted to  
13 include being able to allow runoff, stormwater  
14 runoff into groundwater pits as part of the  
15 treatment practice. It doesn't take too long to  
16 realize that's not a treatment practice, that's  
17 polluting the groundwater. So I think I was  
18 successful in steering that without proper  
19 treatment to make sure that stormwater is not  
20 injected into the aquifer. That's a -- that's a  
21 legacy issue we have been dealing with at the  
22 District for a long time is runoff into  
23 groundwater pits.  
24 I'm currently on the Kansas Geological  
25 Survey Advisory Council that advises, obviously,

1 KGS. We meet, I believe, quarterly, I'm trying  
2 to remember. I've got a meeting coming up  
3 actually on that. Been on that for -- oh, my  
4 goodness. You serve on so many committees you  
5 forget, but for a few years, five or six years  
6 probably. That advises, again, KGS so we meet  
7 and discuss what's going on at the KGS, we talk  
8 about funding KGS programs, staffing, projects  
9 that they're working on. It's -- it's a really  
10 fun committee, I get to learn about things that  
11 KGS is working on usually before the public  
12 does. Looking at seismic activity and studies  
13 related to that so that's a pretty -- pretty  
14 small group. I consider that to be an honor to  
15 be on that -- that advisory council.  
16 I'm also on the Kansas Groundwater  
17 Management Districts Association, that's an  
18 association of the five groundwater management  
19 districts. I recently got elected, I guess, or  
20 appointed as president of that. We had not done  
21 a real good job of meeting regularly, and we're  
22 really working on getting that association back  
23 running full force. That's the Groundwater  
24 Management District managers getting together  
25 and meeting and also generally having other



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1 state agencies to discuss issues that we're  
 2 dealing with and coordination and those kind of  
 3 topics.  
 4 I am on the Groundwater Management  
 5 Districts Association, that's a multistate  
 6 association, I'm a board member on that. So  
 7 generally have two conferences a year, although  
 8 obviously with my work schedule I don't make  
 9 it to every one of those. But went to  
 10 Ft. Lauderdale, Florida a couple months ago and  
 11 met there.  
 12 That's, again, multistate, we meet, we --  
 13 we generally have presentations for the area  
 14 that we meet in and what issues they're having.  
 15 It's a good way to get out of your little world  
 16 about -- you know, we're dealing with Burrton  
 17 chloride. We met in Ft. Lauderdale, and they're  
 18 dealing with saltwater intrusion from the ocean.  
 19 It made the Burrton pale in comparison to -- to  
 20 what they're dealing with; we're talking  
 21 millions and millions, and I think one of the  
 22 estimates on what they are dealing with was over  
 23 a billion dollars. So it gets you out of your  
 24 little world and get to see other issues and how  
 25 they deal with them and spur ideas that you can

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1 take back home. So, again, I've been on that  
 2 board for, oh, my goodness, I don't know, five  
 3 or six years probably.  
 4 Q. Okay. Thank you for that. We also -- you also  
 5 talked about production wells, index wells, and  
 6 monitoring wells, and can you help me make sure  
 7 I understand the difference between the three of  
 8 those?  
 9 A. Okay. Production wells would be -- generally, I  
 10 would consider those the non-domestic type  
 11 wells, although I guess you could say a domestic  
 12 well produces water. So, generally, we're  
 13 talking about production, we're talking about  
 14 larger scale municipal wells, irrigation wells,  
 15 domestic wells. And I think you asked about  
 16 index -- index wells?  
 17 Q. Index and monitoring wells, I wasn't sure if  
 18 they were the same thing?  
 19 A. Well, the index are -- or index wells are the  
 20 monitoring wells, the regulatory monitoring  
 21 wells for the ASR project. There is a cluster  
 22 of two wells, a deep and a shallow, in each  
 23 index cell. So 38 clusters of two wells, 76  
 24 index wells. Those are the index wells that my  
 25 staff measures quarterly, and, of course, the

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1 January measurement would be considered the  
 2 regulatory measurement for whether or not the  
 3 cities could withdraw recharge credits from that  
 4 particular cell that had that monitoring well  
 5 located in it.  
 6 There's -- there's sampling that is done  
 7 from those. My staff does not do those  
 8 samplings, didn't have the specialized  
 9 equipment. These -- these wells are tried to  
 10 maintain on a very high level as far as any  
 11 chances of cross-contamination when they're  
 12 doing sampling, and it takes equipment that I  
 13 didn't have and really cleaning that equipment  
 14 from -- from well to well, which we also do when  
 15 we're measuring, we have a dedicated water level  
 16 measurement device only for those index wells.  
 17 And it is maintained in a clean state, so when  
 18 my staff, based on the training that I provided  
 19 to my staff, we clean our measuring device, take  
 20 the measurement, reel it back out, clean it, go  
 21 on to the next well, even the one right beside  
 22 it, measure, we want to avoid any sort of  
 23 cross-contamination.  
 24 I have not visited one of those sites  
 25 recently, but my hydrologic technician advises

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1 that the -- I believe the City has installed  
 2 some sampling equipment. I think they're called  
 3 a HydraSleeve, and I won't go into details into  
 4 those. USGS used to do the sampling out of  
 5 those wells, and I now believe that the City of  
 6 Wichita is doing their own, although I do not  
 7 know the details.  
 8 We were kind of unaware of that; he told me  
 9 there was equipment installed, but I think  
 10 through some information I've gathered from the  
 11 City, they or maybe one of their consultants  
 12 installed that equipment in those index wells,  
 13 and they're now taking their own samples.  
 14 Samples have to be collected from those wells  
 15 annually, I believe.  
 16 Q. Okay.  
 17 A. And then monitoring wells are, again -- the  
 18 index wells are monitoring wells, but there's  
 19 different levels of monitoring wells. The  
 20 District owns and maintains around 550  
 21 monitoring wells. So we have monitoring wells  
 22 of our own that we also collect data from, water  
 23 level measurements and water quality.  
 24 Q. And that 550 is across the GMD, it's not limited  
 25 to the Wichita well field?

1 **A. That's correct, yeah, we have -- we have**  
2 **monitoring wells throughout the District, some**  
3 **have more -- more focused monitoring wells. For**  
4 **instance, in the Burrton Intensive Groundwater**  
5 **Use Control Area, it has, I don't remember the**  
6 **number, probably close to 100 monitoring wells**  
7 **in it. We use some other wells too that aren't**  
8 **ours.**

9 **So if we have a need, we'll install a --**  
10 **you know, a higher density of monitoring wells.**  
11 **We have a lot down by Pretty Prairie for**  
12 **nitrate tracking. We have a lot in these**  
13 **chloride contaminated areas, Burrton,**  
14 **Hollow-Nikkel to the north, Voshell to the north**  
15 **of that, Johnson Field to the north of that.**  
16 **Then we have cross sections along the Arkansas**  
17 **River; those would generally be in a north-south**  
18 **line, so they're sort of perpendicular to the**  
19 **river flow at distances from the Arkansas River,**  
20 **all the way from Nickerson down to -- to Wichita**  
21 **or the Maize area, we have a cluster of those.**  
22 **So they've been installed throughout time based**  
23 **on the needs of the District for data**  
24 **collection.**

25 Q. And some -- we've referenced several USGS

1 determination of whether there is room in the  
2 aquifer for recharge purposes?  
3 **A. Yes, to determine the recharge capacity, that's**  
4 **in their proposal, in relationship to whether or**  
5 **not the City should either physical recharge,**  
6 **gain AMCs, or a mixture of both based on that**  
7 **January water level measurement.**

8 Q. All right. Based on the quarterly information  
9 being available, is it practical to make the  
10 determination of recharge capacity on a  
11 quarterly basis, or does that -- is that limited  
12 to an annual determination?

13 **A. Well, I think the calculation would be -- the**  
14 **same method would be used for the calculation.**  
15 **If I remember right, I'd have to go back and**  
16 **look at the proposal, was sort of a table, I**  
17 **think, that the City had proposed based on this**  
18 **water level, they would have sort of this table**  
19 **to say this is the recharge capacity of each --**  
20 **each well. So that would seem like a fairly**  
21 **straightforward calculation, that you could do**  
22 **that anytime you took a water level measurement**  
23 **at those index wells.**

24 Q. Okay. And do water levels typically vary from  
25 January to, say, August within a year?

1 reports and the KGS reports throughout this  
2 hearing. Are they using the monitoring wells  
3 and more specifically the index wells to obtain  
4 that data?

5 **A. I --**

6 Q. Or do you know?

7 **A. No, it would probably depend on the report. I**  
8 **think USGS will use any data they -- they can**  
9 **get their hands on. I'm sure they've used the**  
10 **index wells in some of their data, they use our**  
11 **data all the time. We provide data to both USGS**  
12 **and KGS. Whether it be water level or water**  
13 **quality, they use, like I say, I think any data**  
14 **they can get their hands on that they can verify**  
15 **is good data, so they do rely on the District**  
16 **for a lot of that data. And I'm sure they get**  
17 **data from the City of Wichita or from anybody**  
18 **else that can have good, sound data.**

19 Q. And I believe you just said you do -- you or  
20 your staff do quarterly measurements at the  
21 index well locations?

22 **A. Yes, we do.**

23 Q. Are you familiar with the proposal and the  
24 operations plan proposed by the City of Wichita  
25 to use the January measurements as a

1 **A. Yeah, they -- they can, particularly in their**  
2 **relationship to how far they are away from**  
3 **pumping wells. So if you've got large capacity**  
4 **wells nearby pumping that impacts water levels,**  
5 **you can have an overall lowering during -- I**  
6 **mean, generally, you'll see a lowering of the**  
7 **water table during summer because the demand is**  
8 **higher in the summer for both irrigation, City,**  
9 **recreational, the demand is obviously higher in**  
10 **the summertime.**

11 Q. Can you find the Intervenor's exhibit book,  
12 binder? And I'd like you to turn to 21.

13 **A. 21?**

14 Q. Yes.

15 **A. Okay.**

16 Q. And, earlier, we looked at the second  
17 paragraph -- well, can you tell me what this  
18 letter is?

19 **A. This is a letter dated March 8th, 2016 to the --**  
20 **to the District, attention to -- to me, and it**  
21 **is from the chief engineer at the time, David**  
22 **Barfield. And I would have to maybe review this**  
23 **letter real quick if you want me to go into**  
24 **details about it 'cause I'm trying to remember**  
25 **what it was.**

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1 **Okay. I've looked at the letter, it looks**  
 2 **like it's a letter to -- to the District, myself**  
 3 **and the GMD Board, informing the District of the**  
 4 **chief engineer's decision regarding**  
 5 **modifications to certain ASR regulations,**  
 6 **particularly K.A.R. 5-1-1 and K.A.R. 5-12-1.**  
 7 **And my quick review is the chief engineer**  
 8 **advising he's going to go ahead and proceed with**  
 9 **adopting those proposed rules with some changes**  
 10 **to some of those initial draft regulations, the**  
 11 **definition of minimum index level.**  
 12 Q. Do you recall it being said during these  
 13 hearings that the hearing regarding the City's  
 14 proposal was not required?  
 15 A. **Okay, I'm sorry, we're not talking about this**  
 16 **reg change anymore, we're talking about the --**  
 17 Q. We're talking generally throughout the course of  
 18 this hearing --  
 19 A. **Oh.**  
 20 Q. -- you can remember the various different dates,  
 21 at one point in time or another, has it been  
 22 said a hearing regarding the City of Wichita's  
 23 proposal, a public hearing regarding the  
 24 proposal, whether or not it was required?  
 25 A. **I think I've heard Division of Water -- I'm**

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1 **sorry, let me start over. I have heard the**  
 2 **Division of Water Resources' staff, and I**  
 3 **believe there is some documentation in a letter**  
 4 **from Mr. Barfield and I can't point to it but we**  
 5 **could find it, that I think essentially says a**  
 6 **hearing for the City's proposal was not required**  
 7 **but they decided to go ahead and have one.**  
 8 Q. Okay. Can you read the second paragraph of this  
 9 letter for us?  
 10 A. **The one that starts with while?**  
 11 Q. Yes.  
 12 A. **While I have heard the Board's and others'**  
 13 **concern that the proposed rule change could**  
 14 **allow changes in the Wichita ASR that may be**  
 15 **detrimental to the area, such concerns can only**  
 16 **receive full and due consideration when the**  
 17 **issue is ripe, comma, that is, comma, in the**  
 18 **context of a specific project proposal or**  
 19 **request for change. Do you want me to go ahead?**  
 20 Q. No, that's -- oh, yeah, read the last sentence.  
 21 A. **Okay, I'm sorry. If a new project or a change**  
 22 **to the Wichita ASR project is proposed pursuant**  
 23 **to these rule modifications, a full hearing will**  
 24 **be held and a record of facts and concerns will**  
 25 **be made and acted upon.**

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1 Q. We've discussed that there's knowledge of the  
 2 City's discussing this proposal prior to the  
 3 rule change being made. When you received this  
 4 letter, what -- how did you interpret or  
 5 understand that paragraph as it relates to this  
 6 proposal?  
 7 A. **I believe -- I'm getting into the mind of**  
 8 **Mr. Barfield here, but I believe he was saying**  
 9 **that he was going to go ahead and adopt the**  
 10 **rules and regulations, and once the City**  
 11 **submitted a proposal, then I think he said the**  
 12 **concern would be considered when the issue was**  
 13 **ripe, in other words when a proposal was -- was**  
 14 **submitted. I guess, I think that's my take on**  
 15 **that. Is that your question, I'm sorry?**  
 16 Q. Yes.  
 17 A. **Thanks.**  
 18 Q. Okay. Switching gears to safe yield, which was  
 19 talked about today, and you mentioned that it's  
 20 in your duties to do a safe yield analysis for  
 21 permit applications. Do I understand that  
 22 right?  
 23 A. **Yes. We have a rule and regulation, K.A.R.**  
 24 **5-22-7, which specifies under what circumstances**  
 25 **safe yield is applicable and then pretty**

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1 **detailed on how -- how we do safe yields.**  
 2 Q. Okay. And I understand that you have reviewed  
 3 safe yield calculations for the ASR wells  
 4 subject to being changed by this proposal?  
 5 A. **I did perform a safe yield evaluation on all 30**  
 6 **of the water permits that the City is proposing**  
 7 **to have modifications made to.**  
 8 Q. And I believe that's District Exhibit 59.  
 9 A. **Can you tell me which book that's in by chance?**  
 10 Q. Looks like it's Volume IV.  
 11 A. **And I hate to interrupt, I was wondering if this**  
 12 **is going to be a very long line of discussion, I**  
 13 **could use a break. I actually don't mind**  
 14 **continuing to work, I don't -- I don't need to**  
 15 **stop for lunch, but if it's going to be a very**  
 16 **long discussion, I could use maybe a five-minute**  
 17 **break.**  
 18 **MR. ADRIAN:** How about a lunch  
 19 break?  
 20 **MS. WENDLING:** That's fine.  
 21 A. **I mean, I don't want to interrupt you. If it's**  
 22 **something short, I'm glad to move forward**  
 23 **but ...**  
 24 **BY MS. WENDLING:**  
 25 Q. I'll just go ahead and state I don't know how

1 much longer --

2 **A. Okay.**

3 Q. -- but before we get into safe yield, this is  
4 a --

5 **PRESIDING OFFICER:** This might be a  
6 good time for a lunch break. It's 12:30,  
7 let's try to be back by 1:20. Thank you.  
8 (Thereupon, a lunch recess was  
9 taken; whereupon the following was  
10 had.)

11 **PRESIDING OFFICER:** We're now back  
12 on the record, it's 1:30 and, Ms. Wendling,  
13 back to you.

14 **BY MS. WENDLING:**

15 Q. Okay. We were on the topic of safe yield, if  
16 you recall.

17 **A. Yes.**

18 Q. Do you recall testimony regarding the proposed  
19 permit conditions? This would be DWR Exhibit  
20 Number 1, the proposed conditions 12 and 13  
21 regarding domestic wells. You only need to flip  
22 to it if you need to refresh your memory.

23 **A. I probably should -- are you talking about the  
24 660 -- wells within 660 and -- I should probably  
25 flip to it, you know.**

1 question -- there was a question on whether or  
2 not there were wells within the 660 feet other  
3 than domestic wells, meaning would there be  
4 other beneficial uses within that 660 feet. Do  
5 you recall that question?

6 **A. Yeah, I think in that context, I think we were  
7 talking about maybe what I would call  
8 non-domestic wells that may be within -- the  
9 spacing requirement is actually 6 -- or  
10 1320 feet for that, but there might have been  
11 some confusion during that previous testimony by  
12 someone else about 660 and 1320. It's 660 --  
13 660 feet is the spacing requirement for  
14 domestic, 1320 for non-domestic, so I think -- I  
15 think that's what we were discussing.**

16 Q. Okay. And that would be if you were to perform  
17 a well spacing analysis, that's where you would  
18 use those figures?

19 **A. Yes, that's when we were reviewing new  
20 applications or certain change applications that  
21 fall under the spacing regulations, myself or  
22 District staff would perform a spacing  
23 evaluation looking at both domestic and  
24 non-domestic requirements to see if any of  
25 those, either domestic or non-domestic wells,**

1 Q. DWR Exhibit Number 1.

2 **A. Okay.**

3 Q. It's the draft permit conditions. I'm not sure  
4 where the DWR --

5 **A. Well, if you're looking for the draft conditions  
6 that Mr. Barfield wrote?**

7 Q. Yes.

8 **A. Okay. I think -- I think I know where it is,  
9 give me one second. I think it is GMD**

10 **Exhibit 30. It's a letter to GMD2, it says,  
11 with attached initial draft for review, proposed  
12 replacement findings and order in ASR Phase II,  
13 it's probably that one?**

14 Q. That --

15 **A. You're talking about the original -- you're  
16 talking about the draft conditions that  
17 Mr. Barfield submitted for review?**

18 Q. Yes.

19 **A. Okay. Let me -- let me look here. Sorry, I  
20 got -- I got a little confused.**

21 Q. Tim, I don't think it's the same as Exhibit 30.

22 **A. Okay. Anyway, why don't you ask me -- I think I  
23 can ...**

24 Q. When we were discussing the proposed permit  
25 conditions to protect domestic well owners, the

1 **were within that distance and would violate the  
2 well spacing regulation.**

3 Q. Okay. And a safe yield analysis, did that  
4 similarly use a 660-foot measurement?

5 **A. Well, the safe yield looks at a two-mile-radius  
6 circle drawn around the proposed point of  
7 diversion, or in this case a well, but those  
8 permitted wells are shown on the map. The  
9 non -- the domestic wells -- pardon me, the  
10 non-domestic wells are shown, the domestic wells  
11 are not shown in that safe yield evaluation.**

12 Q. Can you find the safe yield analysis that you  
13 did that we marked as District 59?

14 **A. I'm there.**

15 Q. Okay. And it'll be easier if I have this in  
16 front of me. So if you flip a couple pages in  
17 to permit 46,720, those permit numbers being on  
18 the top left.

19 **A. Okay. And just for everybody's ease, these are  
20 in -- these are in sequential order, so  
21 they're -- 46,720, which should be about six or  
22 seven pages back, I think we start at 46,714.  
23 So, okay, 46,720.**

24 Q. And to answer the question of whether there are  
25 non-domestic wells within 660 feet of a Wichita

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1 ASR well --  
 2 **A. Uh-huh.**  
 3 Q. -- will this safe yield analysis help us  
 4 determine whether or not that is the case?  
 5 **A. The safe yield doesn't have the specific spacing**  
 6 **evaluation; however, you know, you could look at**  
 7 **this, and if it's obvious that a non-domestic**  
 8 **well, and I'm going to go back to the 1320**  
 9 **because that's the -- the 1320, you can tell, I**  
 10 **think, pretty easily if there was a well**  
 11 **obviously within 1320 feet by looking at this --**  
 12 **this safe yield, because the red dot that's in**  
 13 **the middle is the proposed well location, and**  
 14 **then those are sections. So it's pretty --**  
 15 **well, it's pretty easy for me because I've seen**  
 16 **thousands of these, it's pretty easy for me to**  
 17 **tell where the quarter mile and the half line**  
 18 **would be. If you want a detailed analysis, I'd**  
 19 **have to do a spacing evaluation, but if**  
 20 **you're --**  
 21 Q. For the triangle that's touching the red  
 22 circle --  
 23 **A. Yes.**  
 24 Q. -- we can assume that's within the 13?  
 25 **A. That one definitely looks to be within the**

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1 **1320 feet. And although I review -- have**  
 2 **reviewed hundreds or thousands of applications,**  
 3 **I can recall this one in particular, I think,**  
 4 **because this one did require a waiver from the**  
 5 **Board, I think for both of those red triangles**  
 6 **that are -- that are to the south and southwest.**  
 7 **I know for sure the red triangle that is to the**  
 8 **south is obviously within 1320 feet; and if**  
 9 **memory serves me correct, the red triangle then**  
 10 **that is a little bit further to the left, or in**  
 11 **this case to the west, I believe was also within**  
 12 **1320 feet, but I would have to -- I would have**  
 13 **to check that. It looks really close, and I do**  
 14 **remember this particular application did -- did**  
 15 **have to have spacing waivers from the Board.**  
 16 Q. Okay. And so can you explain to us the data in  
 17 the table on the right and what that tells us  
 18 about those two triangles we just talked about?  
 19 **A. Sure. The -- the output from the spreadsheet,**  
 20 **so our safe yield evaluation picks up every one**  
 21 **of these red triangles and puts them into a**  
 22 **spreadsheet, along with certain attributes of**  
 23 **what that red triangle means.**  
 24 **The first column is the file ID or the**  
 25 **water permit number. The second one is just an**

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1 **internal well ID from our access database, so we**  
 2 **can ignore that next column. Third one is the**  
 3 **township. Fourth one is the range. Fifth one**  
 4 **is the section number. The sixth is the**  
 5 **qualifier, and by that, we mean footage**  
 6 **measurements from the southeast corner of the**  
 7 **section that it's located in. And those are**  
 8 **measurements that identify the well or the point**  
 9 **of diversion based on the authorized location**  
 10 **from the water right or water permit.**  
 11 **The next is the type of use, and it's**  
 12 **abbreviated, so MUN would mean municipal, IRR**  
 13 **would be irrigation. Let's see if there's**  
 14 **another one. Okay, there's an STK, which is**  
 15 **stock watering. This -- this is all from an**  
 16 **internal database, I should mention, from the**  
 17 **Groundwater Management District that we maintain**  
 18 **ourselves that gets updated regularly. If**  
 19 **there's a new application or new permit, a**  
 20 **change, move the location, a quantity, whatever,**  
 21 **it gets updated; this is something we update all**  
 22 **the time.**  
 23 **And then the last column would be the**  
 24 **authorized quantity of that particular water**  
 25 **right, or if there's multiple wells involved**

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1 **with the water right, then -- of that particular**  
 2 **well. For instance -- well, down at the bottom**  
 3 **where it says Harvey County 6, those are City**  
 4 **wells. But there are a number of wells**  
 5 **authorized by Harvey County 6, so that's why**  
 6 **it's listed multiple times because in this case**  
 7 **there are, looks like about ten City wells all**  
 8 **identified under the water right, vested right**  
 9 **Harvey County 6.**  
 10 **The top is just a description of what this**  
 11 **was, safe yield evaluation for this particular**  
 12 **application, with a little more detail on what**  
 13 **the City well is called. The location, the**  
 14 **legal description, and the footage measurements**  
 15 **for that -- for that well that the evaluation is**  
 16 **being performed on. Whether it's in a special**  
 17 **use area or not; in this case, this is in a**  
 18 **special use area so it says none. And then the**  
 19 **date the evaluation was done.**  
 20 **The next line, which is in pretty small**  
 21 **print, says total area; that means how many**  
 22 **acres are in that two-mile circle. A normal**  
 23 **two-mile circle contains 8,042 acres. It says**  
 24 **area in 3-inch discharge zone, zero areas in**  
 25 **6-inch discharge; we could say discharge or**

1 recharge, I guess, in this case. It's the  
2 entire circle as a recharge rate for this  
3 calculation of 8,042 acres.

4 Now let's move to the bottom of the  
5 spreadsheet. On the left, in the text box, it  
6 says allowable appropriation, that's the 4,021  
7 acre-feet area that we would allow in a two-mile  
8 circle of appropriations. The small user  
9 quantity that could be allowed in that two-mile  
10 circle is 45 acre-feet. And we can get way  
11 involved on what a small use permit is, and  
12 perhaps we'll save that for another time, but in  
13 this case, it appears that all the small use  
14 quantity has been used.

15 In this case, there's been three  
16 15 acre-foot small use permits approved, why  
17 there's none left. So if someone was looking  
18 for a small use permit in this area, there  
19 wouldn't be any left. That's an exception to  
20 our safe yield regulation, and, again, I think  
21 we'll get into the minutia if I get too far.

22 The total existing appropriation is  
23 20,240.56 acre-feet, that's adding up all those  
24 authorized quantities above it. What I'm  
25 calling nonconsumptive appropriation is

1 6500 acre-feet. That in this case is the City's  
2 ASR Phase II recharge recovery permits that are  
3 identified above as -- as either 500 or 1,000  
4 acre-feet. We don't count those in the safe  
5 yield regulation because they're exempt. And  
6 then consumptive appropriation in this example  
7 is 13,740.56 acre-feet. I know I went way into  
8 detail, but I -- anyway, what was your question?

9 Q. I'm sure everyone appreciates that right after  
10 lunch. If we go back to the red circle --

11 A. Uh-huh.

12 Q. -- and the City well in the middle of the larger  
13 red circle --

14 A. Uh-huh.

15 Q. -- we see 15-24 south, 2 west?

16 A. Yep.

17 Q. And that -- can we correlate that to section 16  
18 in your table --

19 A. Yeah.

20 Q. -- to find information regarding those specific  
21 wells?

22 A. Yes.

23 Q. Okay.

24 A. So that particular one, if we go to the section  
25 we'll see there's about -- there's three of them

1 that are listed in section 16 that are clustered  
2 together, about not quite halfway down. And  
3 beside those is the footage measurement. So the  
4 first one is water right 32857D1, this is a  
5 divided water right. The footage measurements  
6 for that one are 20 feet north and 1320 feet  
7 west. So if we go back to section 16, that is  
8 the red triangle that is at the bottom of  
9 section 16 kind of by itself in the bottom of  
10 the southeast quarter. So that's not the  
11 triangle we were looking for.

12 So the triangle that we're looking for  
13 that's close is actually two -- two more down  
14 from there where it says 2100 feet north and  
15 400 feet west. That would then be the red  
16 triangle that's closest to the City well.

17 Q. Okay.

18 A. And it is authorized for by water right 32857D3,  
19 its authorized use is stock watering, and the  
20 authorized quantity for that particular well or  
21 permit is 17 acre-feet per year.

22 Q. So is that a very long way of saying, to your  
23 knowledge, there are irrigation and stock  
24 watering wells within 660 feet of Wichita ASR  
25 wells?

1 A. On this particular one, I'm not sure about 660.  
2 It definitely looks like 660. I'm absolutely  
3 confident that it's within 1320 feet, which  
4 would be the regulatory requirement.

5 Q. Okay.

6 A. The well could be sited as, I believe, also  
7 authorized by that water permit, because I saw  
8 it, it's close. I am sure I did a spacing  
9 evaluation at the time, but they're not in the  
10 notebook. That one -- I believe that one  
11 violated well spacing and had to get a waiver,  
12 I'm just -- from my memory.

13 Q. Okay.

14 A. I remember that file in particular. And I think  
15 there's a house, you can't really see it,  
16 there's a house nearby there too that was  
17 probably within 660 feet. It's kind of  
18 underneath the red triangle.

19 Q. Your eyes are better than mine.

20 A. I'm -- I'm familiar with this evaluation and  
21 this location.

22 Q. With the well spacing, rather than safe yield,  
23 do you know if well spacing was done with regard  
24 to ASR Phase II when these wells were put in?

25 A. Yeah, there was a spacing evaluation that would

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1 have been ran for every one of these. Those  
 2 that didn't meet had to receive a waiver from  
 3 either the owner for a domestic well, an owner  
 4 cannot consent on a non-domestic well, there is  
 5 no stipulation for that, that has to go in front  
 6 of the Board. An owner of a non-domestic well  
 7 cannot say, it's okay for this other  
 8 non-domestic well to be within 1320 feet, that  
 9 has to have a board waiver. A domestic owner  
 10 can sign a consent form allowing that well to be  
 11 too close. So this particular one would have  
 12 had to have had either a -- well, in this case,  
 13 this would have had to take a board waiver  
 14 because those are non-domestic wells within  
 15 1320 feet.  
 16 Q. And those board waivers are records you keep in  
 17 the ordinary course of business of GMD2?  
 18 A. Yeah, we should have an evaluation of that.  
 19 Q. That has not been introduced as an exhibit, to  
 20 your knowledge?  
 21 A. I don't believe it has been. I believe, and it  
 22 wasn't -- it wasn't admitted, I believe the  
 23 evaluation that was done on the 30 pending  
 24 applications that the City eventually withdrew,  
 25 there is an evaluation of every one of those in

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1 the exhibit notebooks. There is not a  
 2 full-blown evaluation of these existing Phase II  
 3 that are subject to this proposal, although they  
 4 will be in my water right files in the office.  
 5 Q. But that would have been done at the time of  
 6 Phase II, not updated as far as this proposal?  
 7 A. That's correct, it would have been done at the  
 8 time the applications were filed back in,  
 9 whenever they were filed, 2007. I believe the  
 10 reason these are dated December 5th, 2019, I did  
 11 them specifically for this hearing because we  
 12 did not do safe yield evaluations for the ASR  
 13 Phase II applications when they were originally  
 14 applied for and reviewed because they weren't  
 15 subject to safe yield. At least to my  
 16 knowledge, I don't think we did. So there was  
 17 really no sense in -- I mean, they were exempt  
 18 so we didn't run a safe yield at the time  
 19 because our regulation didn't apply to those 30  
 20 applications.  
 21 Q. Okay. All right. Can you find the black binder  
 22 with the City's proposal?  
 23 A. Are we done with the safe yield so I can put  
 24 that book away?  
 25 Q. I believe I am.

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1 A. Thank you.  
 2 Q. With that detailed explanation, I don't know how  
 3 there could be more questions.  
 4 A. You can limit my answers to 30 seconds or less,  
 5 I'd be okay with that. All right, the black  
 6 notebook.  
 7 Q. Table 2-5 in the proposal, which is on  
 8 page 2-10, we've referred to it several times.  
 9 A. Okay.  
 10 Q. I believe it was yesterday that you clarified  
 11 the City's current ability for recharge  
 12 credits --  
 13 A. I'm sorry, can you turn off your microphone?  
 14 I'm having some feedback from some other folks  
 15 talking, I can't hear two people. Can you turn  
 16 the microphone up maybe, or something? Is it  
 17 on?  
 18 Q. It's on.  
 19 A. Okay.  
 20 Q. I could yell at you but --  
 21 A. It's okay.  
 22 Q. So yesterday --  
 23 A. I'm sorry, can we go off the record for one  
 24 second?  
 25 PRESIDING OFFICER: Yes.

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1 (Discussion held off the record.)  
 2 PRESIDING OFFICER: Yes, back on the  
 3 record.  
 4 A. Thank you.  
 5 BY MS. WENDLING:  
 6 Q. Yesterday you -- I think it was yesterday  
 7 anyway. Earlier, you corrected the 19,000  
 8 figure, which I believe is the number of  
 9 credits -- or acre-feet the City can withdraw  
 10 from ASR Phase II. We had been referring to it  
 11 as 19,000, you did some math and said it's  
 12 actually 18,000 acre-feet. Does that ring any  
 13 bells?  
 14 A. Yes, the 30 ASR Phase II applications that are  
 15 subject to this proposal, I am very confident  
 16 they total 18,000 acre-feet of recharge credits  
 17 that could be pumped per year if recharge  
 18 credits are available.  
 19 Q. So when I look at table 2-5 --  
 20 A. Uh-huh.  
 21 Q. -- under City of Wichita credit pumping --  
 22 A. Uh-huh.  
 23 Q. -- in year three --  
 24 A. Yes.  
 25 Q. -- and I see 19,000 and change --

1 **A. Uh-huh.**  
2 Q. -- would that actually, to your knowledge, be  
3 limited to 18,000?  
4 **A. They could not pump more than 18,000 acre-feet**  
5 **per year of recharge credits under their**  
6 **existing 30 permits, so, yes, that -- to be able**  
7 **to pump 19,907 would either require usage of ASR**  
8 **Phase I, because they do have some quantities**  
9 **available, or new applications. And since we're**  
10 **talking about ASR Phase II, I believe it would**  
11 **probably just take new applications to exceed**  
12 **the 18,000 acre-feet.**  
13 Q. Such as the 30 that were withdrawn?  
14 **A. Yes, yes.**  
15 Q. Okay. We've talked about the aquifer being  
16 80 percent full following the 1 percent modeled  
17 drought. And when my clients hear that after a  
18 1 percent drought the aquifer is still  
19 80 percent full, or if they look at the figure,  
20 figure 11 in the proposal, they say, if all of  
21 this water is available, why can I not get an  
22 appropriation, how do you answer that? And have  
23 you needed to answer that to any water users in  
24 the District?  
25 **A. Yes, I have answered that. I mean, I get that**

1 **question more than just related just to this --**  
2 **this project also. I mean, I get that question,**  
3 **for instance, you know, there's -- there's water**  
4 **so close to groundwater level surface right now**  
5 **in the City of Hutchinson, they're dewatering**  
6 **wells, pumping to keep them out of basements, so**  
7 **I get that question, why -- why can't a new**  
8 **permit be approved, water table is high?**  
9 **And the simple answer is we manage the**  
10 **aquifer on a safe yield basis. So we're not**  
11 **going to react to the ups and downs of the**  
12 **aquifer, I guess, I was looking for the right**  
13 **term, but for the -- the variation. So we**  
14 **manage on the safe yield, and I think we talked**  
15 **about the safe yield regulation. That is a**  
16 **mathematical calculation based on discharge and**  
17 **recharge.**  
18 **If we tried to evaluate every application**  
19 **on what the water level is doing, that would be,**  
20 **I think, an inappropriate way to do it, and it**  
21 **would be almost impossible because we'd be**  
22 **reacting on the whims of which way the water**  
23 **level went from year to year. So we're doing a**  
24 **safe yield calculation which it seeks to balance**  
25 **discharge and recharge. Now, some areas are**

1 **over-appropriated and we're well aware of that**  
2 **because they were put in before the safe yield**  
3 **regulation. But any new applications would be**  
4 **subject to that. And the simple answer is all**  
5 **the water that's available, according to the**  
6 **safe yield, is already dedicated to other users,**  
7 **and that's why someone can't get a new permit in**  
8 **an over-appropriated aquifer.**  
9 Q. And do you recall when safe yield went into  
10 effect?  
11 **A. It was either 1979 or 1980. And, actually, if I**  
12 **turn to our regulations, the footnote may**  
13 **provide that answer depending on if it was a**  
14 **policy or a regulation.**  
15 Q. That's okay.  
16 **A. It was '79 or '80.**  
17 Q. I think that's close enough.  
18 **A. To be honest, I've been saying 1980, I think,**  
19 **for most of my career, but there may be some**  
20 **indication it may have been 1979 so ...**  
21 Q. So when an application is filed and the safe  
22 yield analysis says that an aquifer in that area  
23 is over-appropriated, what does your office do?  
24 **A. We would recommend denial of that application to**  
25 **the chief engineer.**

1 Q. Okay. Can you find tab number 5 in the  
2 Intervenor's binder?  
3 **A. I guess I should clarify my answer, we would**  
4 **recommend denial unless it was exempt from safe**  
5 **yield.**  
6 Q. Okay.  
7 **A. Just to be clear. I didn't want -- didn't want**  
8 **to say just because it's over-appropriated it's**  
9 **automatically recommended for denial.**  
10 **Okay. This is Number 5.**  
11 Q. Yes. Can you describe what that appears to be?  
12 **A. Can I have a minute to review it?**  
13 Q. Yeah.  
14 **A. This is a letter from the Groundwater Management**  
15 **District in 1980, which was signed by Thomas**  
16 **Bell, which I believe was the GMD2 first**  
17 **manager, to an individual named Floyd Holle,**  
18 **advising Mr. Holle that the GMD2 performed an**  
19 **evaluation to determine if a permit for a new**  
20 **well could be approved, and it is advising**  
21 **Mr. Holle that the area is over-appropriated and**  
22 **it would mean that a new permit could not be**  
23 **approved because of the -- I don't see the words**  
24 **safe yield in here, but that is quite obvious**  
25 **that there was a safe yield evaluation ran that**



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1 showed 14,507 acre-feet presently appropriated,  
 2 and according to the GMD management program at  
 3 that time, no more than 4,025 acre-feet could be  
 4 appropriated in that two-mile circle. Looks  
 5 like they were originally using 4,025, which was  
 6 real close to the 4,021 that we actually use  
 7 today.  
 8 Q. Okay. And can you turn to the next -- well, is  
 9 this the type of letter that would go to an  
 10 applicant who does not meet safe yield  
 11 requirements?  
 12 A. This is the type of letter that would go to a  
 13 potential applicant. I don't think that this  
 14 indicates that an application was filed. I  
 15 think they were asking, before they would file  
 16 an application, for the District to perform what  
 17 I would now call nowadays a preliminary  
 18 evaluation, which we do frequently for people.  
 19 So I don't think an application was filed. If  
 20 an application was filed, the recommendation of  
 21 denial would have been to the chief engineer.  
 22 This looks like a -- a individual's request for  
 23 a preliminary evaluation to me.  
 24 Q. Okay. And if you turn the page and take a brief  
 25 look at the next document.

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1 A. Okay. I've looked at it.  
 2 Q. All right. And can you tell us what this is?  
 3 A. This is a dismissal of an application signed by  
 4 Lane Letourneau with the Division of Water  
 5 Resources, and the date of the order is  
 6 October 24, 2016. This is a dismissal of an  
 7 application, 49,566, for failure to meet the  
 8 District's, the GMD2's safe yield regulation.  
 9 Q. And does this look a little bit more familiar to  
 10 you as to what would be sent to an applicant  
 11 that does not meet safe yield today?  
 12 A. This looks like what would be sent from the  
 13 Division of Water Resources. It was different  
 14 from the letter that I would send to the -- to  
 15 the Division of Water Resources, but it looks  
 16 like -- looks like the District submitted a  
 17 recommendation of denial to the Division of  
 18 Water Resources by letter dated September 14th,  
 19 2016 advising that the application didn't comply  
 20 with the safe yield regulation.  
 21 Q. So procedurally you, your office would get the  
 22 application, conduct a safe yield analysis, and  
 23 make a recommendation to approve or deny, and  
 24 then that goes to DWR?  
 25 A. Yes, we would review an application, not just

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1 for safe yield but all of our other regulations,  
 2 which would be spacing and any other regulation  
 3 that would be applicable to that application.  
 4 So that is a normal procedure, we receive the  
 5 application from the Division of Water Resources  
 6 with a request to review, perform that review,  
 7 provide a recommendation, and then the chief  
 8 engineer acts on that recommendation.  
 9 Q. Okay.  
 10 A. And I should say there is an appeal process, but  
 11 I don't know if we want to go into that, they  
 12 can -- an applicant can appeal to the District  
 13 Board of Directors asking for an exception. So  
 14 this -- our letter isn't the end, they do have  
 15 some potential for both appeal and even a  
 16 reconsideration of an appeal.  
 17 Q. Okay. So if we find ourselves in a place where  
 18 after a 1 percent drought the aquifer is  
 19 80 percent full, yet when you do safe yield  
 20 analysis in the same area it's over-appropriated  
 21 for safe yield, how can we balance -- how can my  
 22 clients understand, is there water available  
 23 when the aquifer is only 80 percent full?  
 24 A. There's still water available or there could  
 25 still be water available for those that already

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1 have a claim to that water, a right to use that  
 2 water. There would not be any water available  
 3 for anybody that wanted a new application, other  
 4 than domestic, temporary, and certain small use  
 5 or applications of that nature.  
 6 Q. Okay. Have you -- proposal figure 11, yeah.  
 7 Have you had reason to use this figure in  
 8 talking to any water users in the District to  
 9 help them become comfortable that with this  
 10 proposal water is still available for their use?  
 11 A. I think I've discussed the proposal and some of  
 12 the figures in the proposal, and most likely  
 13 figure 10 and 11 I've discussed, I think, with  
 14 people who have asked questions regarding the  
 15 proposal and what the impacts are.  
 16 Q. Do you believe figure 11 should give comfort to  
 17 water users that if water table -- the water  
 18 levels were lowered to the modified minimum  
 19 index levels they would still have adequate  
 20 water available as their authorized quantities?  
 21 A. I -- I don't think it should give them automatic  
 22 comfort, I mean, everything is site specific to  
 23 both their well and the wells that are nearby  
 24 and the saturated thickness, the depth of the  
 25 aquifer, how much clay is in the aquifer, how

1 much sand, so this is too broad of a scale for  
2 me to be able to advise someone that -- should  
3 they be concerned or not.  
4 Q. Earlier, in these hearings, we referred -- well,  
5 in the proposal, I believe attachment I is the  
6 hydrograph prepared by Burns & McDonnell.  
7 A. These are -- yeah, these are hydrographs based  
8 on the modeled results; I don't think these  
9 are -- yeah, these indicate stress periods of  
10 the aquifer. So these are modeled, these appear  
11 to be modeled results that would show the  
12 groundwater elevation based on the ten years of  
13 stress periods that are identified on the  
14 bottom. So these are modeled results, not  
15 actual water levels, the way I'm reading these.  
16 Q. So my understanding from an earlier discussion  
17 was that a well owner, and I'm on the first one,  
18 so index cell 1, could use this as a way to  
19 identify whether their particular well might be  
20 impacted by the proposed modifications. Do you  
21 see how a well owner would use this hydrograph  
22 for that purpose?  
23 A. Well, the hydrograph demonstrates the modeled  
24 results, so you could gain some knowledge by  
25 if -- if the model is accurate for this

1 particular cell or close to accurate, you could  
2 gain some -- some knowledge on what the expected  
3 water level could be during a drought at that  
4 particular index well. So it's a little  
5 confusing because the tables -- or figures 10  
6 and 11 are averages of the cells. This is site  
7 specific modeled results, at least that's what  
8 the legend indicates, for the particular index  
9 well that is in that cell.  
10 So we're looking at IW1 here on this first  
11 one, that is showing both the upper aquifer and  
12 the lower, the shallow and the lower modeled  
13 results from the -- from the groundwater flow  
14 model that was run. So you could gain -- I  
15 think you could gain some -- some knowledge. I  
16 mean, it really comes down to how -- how  
17 accurately does this represent the actual index  
18 well water levels that would be physically  
19 measured, actual measurements. And without  
20 comparing the two side by side, I don't -- I  
21 mean, that would be a good exercise to do.  
22 Again, these are modeled results and I have  
23 real-time data so somewhat hard to compare, but  
24 I think you could look at both and say, well,  
25 this looks like it's reasonable or, no, this

1 doesn't look reasonable.  
2 Q. Okay. And when you talk about comparing, is  
3 that -- previously Counsel had used District  
4 Exhibit 60 as a comparison.  
5 A. Are those the water level hydrographs that we  
6 provided --  
7 Q. Yes.  
8 A. -- do you know?  
9 Q. That's how I understand them.  
10 A. Why don't I look at them. Volume IV, I think,  
11 if everybody's looking for them. If that's  
12 helpful.  
13 Q. So 'cause I don't look at these often, can you  
14 help me understand the difference between -- I'm  
15 on the first page of both which appears to be  
16 for index cell 1.  
17 A. I want to apologize, I wasn't laughing at you, I  
18 was laughing at Mr. Stucky over there. I was  
19 not laughing at you, I want to be clear for the  
20 record. I'm sorry, go ahead.  
21 Q. Can you help me understand the difference, you  
22 talked about -- you can do it better than I can,  
23 help me understand the difference between the  
24 hydrographs attached to the proposal and the  
25 hydrographs in item 60.

1 A. Okay. I'm going to take just a minute to look  
2 at them --  
3 Q. Okay.  
4 A. -- so I can maybe get my thoughts together as I  
5 look at these. Okay. So the -- the hydrograph  
6 that's in the City's proposal, and if you look  
7 real close, it actually has two hydrographs,  
8 they happen to be on top of each other for this  
9 particular modeled results of IW1A and C, which  
10 is the green and blue line; you can see they're  
11 basically, I would say, on top of each other.  
12 That's showing the modeled results through the  
13 eight years of drought and the two years of  
14 recovery, so ten years total.  
15 The red line on that hydrograph is the --  
16 the 1990 minimum index level, they call it the  
17 1993 -- well, actually, I'm not sure -- I'm not  
18 sure, but I believe the red line is the minimum  
19 index level because it's identified as the  
20 lower, and we use the lower for the regulatory  
21 1993 minimum index level.  
22 Q. The current minimum index level?  
23 A. The current -- yeah, and it's a little confusing  
24 because they have an upper and a lower, which is  
25 a blue clear at the top, and we picked sort of a

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1 **bad one to look at because there is a extreme**  
 2 **head difference in index cell number 1 between**  
 3 **the upper and --**  
 4 Q. Would it be easier if we flip the page?  
 5 **A. It could, although while we're here it would**  
 6 **demonstrate the model has some issues in the**  
 7 **northern part of the basin storage area, which**  
 8 **is well -- well known and been recommended to be**  
 9 **fixed by the District more than once.**  
 10 Q. Okay.  
 11 **A. This has a huge head difference between the blue**  
 12 **and the red, but you can see the modeled**  
 13 **results, they overlay each other.**  
 14 Q. Well, let's do -- I think you guys have  
 15 discussed that before. So let's try cell 2 and  
 16 see if that --  
 17 **A. Cell -- cell 2 would be -- would be better, I**  
 18 **think, to use.**  
 19 Q. Okay.  
 20 **A. Just because of the head differences that are**  
 21 **identified by the model and the reality of the**  
 22 **head difference is so huge in IW1.**  
 23 Q. Okay. Now, when I flip through --  
 24 **A. I'm sorry, let's -- IW2 has the same problem,**  
 25 **let's -- I thought we were on 2, let's do IW3.**

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1 Q. 3?  
 2 **A. IW1 and 2 both have extreme issues with wellhead**  
 3 **differences --**  
 4 Q. Okay.  
 5 **A. -- between model and reality, which, again, have**  
 6 **been identified that need refinement. Let's do**  
 7 **IW3, I think IW3 is --**  
 8 Q. More typical?  
 9 **A. Would you mind if I found one that would be the**  
 10 **most easiest one to look at?**  
 11 Q. Yes, please.  
 12 **A. IW3 has some problems too.**  
 13 Q. The least confusing preferably.  
 14 **A. I'm trying to find one that has sort of the**  
 15 **most -- the most spread in the lines so it's**  
 16 **easier to look at, because the lines get so**  
 17 **close together that -- let's do IW10 maybe,**  
 18 **might be the -- I don't know, I'm just trying to**  
 19 **find one that is less confusing than the others.**  
 20 Q. Okay.  
 21 **A. Is that one okay to look at?**  
 22 Q. I have to admit, this is all very foreign to me.  
 23 **A. That's okay.**  
 24 Q. There is divergence in the lines and they're all  
 25 in the purple bars, that's all I know.

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1 **A. Yeah, we can go over them. You want me to go**  
 2 **ahead?**  
 3 Q. Yes.  
 4 **A. Okay. So we're looking at IW10, and I**  
 5 **apologize, I think this one maybe is a little**  
 6 **bit easier to understand. The black line on**  
 7 **IW10A and 10C in the City's report shows the**  
 8 **groundwater level elevation approximately. The**  
 9 **blue line shows the upper 1993 levels; I think**  
 10 **we should ignore those because they're not the**  
 11 **right regulatory. The red is the 1993 lower**  
 12 **elevation, that should be the regulatory number.**  
 13 **And then the blue and green lines, which are**  
 14 **overlying each other, are the modeled results**  
 15 **during the drought stress period and two years**  
 16 **of recovery.**  
 17 Q. And am I correct that the proposed minimum index  
 18 level is not depicted on this hydrograph?  
 19 **A. The proposed minimum index level is not shown on**  
 20 **this hydrograph.**  
 21 Q. Okay.  
 22 **A. And if you want to contrast that with what is**  
 23 **shown on the GMD2-made hydrograph, it is only**  
 24 **for the IW10C, only for the deep well, so I**  
 25 **think that -- that's of note. Just so we're**

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1 **clear, we're only looking at IW10C. The red**  
 2 **line -- let me start over. The top is the**  
 3 **approximate land surface elevation that's**  
 4 **labeled right below the label. The red line is**  
 5 **the existing minimum index level; that's the**  
 6 **elevation that's the regulatory number of**  
 7 **1375.09 feet above sea level. The blue line**  
 8 **demonstrates the minimum drought model**  
 9 **elevation, that is from the City's proposal.**  
 10 Q. And how does the minimum drought model  
 11 elevation, the blue line on the District's  
 12 hydrograph, that would be the green line on the  
 13 proposal hydrograph?  
 14 **A. Right, so the minimum drought model elevation on**  
 15 **the District's, in the blue, is what the City**  
 16 **modeled results show as the lowest point that**  
 17 **occurred during the model runs.**  
 18 Q. Okay.  
 19 **A. So it would be the lowest model run probably in**  
 20 **year eight, which looks like about right. We**  
 21 **said it was 1368 feet, and the -- the model run**  
 22 **looks like it's about 1368, so that would**  
 23 **probably be where that came from.**  
 24 Q. Okay.  
 25 **A. Because we got to remember the minimum drought**

1 elevation that's listed in the tables, in the  
2 proposal is the lowest that it achieved during  
3 the drought --  
4 Q. Okay.  
5 A. -- run. And then the green is the proposed --  
6 I'm sorry, the green on the GMD2 hydrograph is  
7 the proposed minimum index level that's proposed  
8 by the City's proposal. And you can see it's a  
9 10-foot difference between the blue and the  
10 green, so they're proposing to lower the minimum  
11 index level 10 feet below the modeled drought  
12 results and about 17 feet, if I'm doing the math  
13 right, and I believe I am, 17 feet below the  
14 current minimum index level.

15 Q. So if I -- my domestic well is in index well --  
16 or index cell 10 --

17 A. Uh-huh.

18 Q. -- I want to make sure that my well is deep  
19 enough that it goes below both the minimum  
20 drought and the proposed minimum index levels,  
21 and that's what this will show me?

22 A. At the specific IW well location, this would be  
23 specific to that. And I really glossed way over  
24 something -- two items on here. One is the  
25 approximate bedrock elevation at the bottom, and

1 from January, because that's the regulatory date  
2 when the water levels are measured.

3 Q. Okay.

4 A. So you were asking -- at this IW -- if you had a  
5 well right by IW10C, you would want to make sure  
6 your well had enough water column of available  
7 aquifer, sands and gravels in particular, well  
8 below -- well below, for sure, the proposed  
9 minimum index level because you can't just have  
10 your well right there, you got to have -- you  
11 got to have room for pumps and those kind of  
12 things; so you would want to have a well deeper  
13 than the proposed minimum index level, or at  
14 least I would. If I was installing a well, I'd  
15 say, well, if the City is going to go down to  
16 1358 feet, or roughly 74 feet below land  
17 surface, I better get my well, you know, farther  
18 than that.

19 Q. Okay. And is that how you would recommend well  
20 owners in the area use these hydrographs? Or is  
21 there further work they should do?

22 A. Well, yeah, I think further work. This is  
23 one -- one point in a two-by-two-square-mile  
24 area so it would certainly give you some  
25 insight. You know, if -- we have the -- we have

1 those -- we would have made that based on the  
2 drill logs that we had from the IW wells, we've  
3 talked about those drill logs before.

4 Q. So that's an actual data point?

5 A. It is a -- yeah, the elevation's calculated  
6 based on the depth of bedrock that was shown in  
7 the hydrograph; it simply is taking the land  
8 surface elevation and subtracting the depth of  
9 the bedrock. So if the bedrock was 200 -- 200  
10 feet from the top of land surface, it's just the  
11 land surface elevation minus 200 feet, which is  
12 about what it is on this one; actually it's  
13 about 189 or so.

14 And then the gray or blackish line is the  
15 actual water level measurements, quarterly  
16 measurements that primarily was taken by GMD2  
17 staff. Some of the early ones, I think, may  
18 have been done by USGS; I'd have to look at the  
19 record on this particular site. Every one of  
20 those black triangles are actual measurements  
21 that we took at the index wells from land  
22 surface. And the bigger triangles are the  
23 January ones.

24 Q. Okay.

25 A. So -- and the reason the bigger triangle are

1 the proposed minimum index level so we kind of  
2 know where the elevation is. I mean, the water  
3 ends up being sort of flat, it depends on how  
4 much ground is above it as far as how far you  
5 got to get down to the water table.

6 And I generalize that, it's not exactly  
7 true, but we know about the water level is about  
8 1358 feet, so if I knew my land surface  
9 elevation, I could calculate probably how deep I  
10 wanted my well. With the caveat that you would  
11 have to look at -- either drill a test well,  
12 drill the well, or if you had a nearby log to  
13 see -- if it's all clay below that well, that's  
14 a problem. I could drill a deeper well, but if  
15 I'm going to put it in clay -- I mean, I'd have  
16 to make sure there was productive sand zones. I  
17 think that's where we got into that term  
18 practical saturated thickness that's been such a  
19 controversy. But drilling a well, just saying I  
20 want to be 20 feet deeper, well, you know, I  
21 don't know what's below me, and then there's  
22 also potential quality issues you'd want to look  
23 at.

24 Q. Okay. Thank you for that. Hopefully, some of  
25 my clients were taking copious notes.

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1 **A. I'd be glad to meet with anybody from the City**  
 2 **to the irrigators to discuss if they wanted --**  
 3 **if they want to go over it.**  
 4 Q. In your work and in your duties, do you have an  
 5 obligation to work with all water users  
 6 regardless of beneficial use?  
 7 **A. Yes. I mean, I had to think about it, all users**  
 8 **of the District obviously. I didn't want to**  
 9 **sound like I paused because I had to think about**  
 10 **it, yes, all users of any groundwater in the**  
 11 **District. I mean, I help surface water owners**  
 12 **too just because they -- because I can, if they**  
 13 **need some help, but --**  
 14 Q. And you do that -- and no bias between one  
 15 beneficial use to the next?  
 16 **A. Oh, absolutely not. I mean, we are -- anybody**  
 17 **that has a need or a request, we'll treat the --**  
 18 **treat the same.**  
 19 **MS. WENDLING:** Okay. And I have no  
 20 further questions.  
 21 **PRESIDING OFFICER:** Okay.  
 22 **MR. STUCKY:** Can I confer with  
 23 co-counsel for a second?  
 24 **PRESIDING OFFICER:** Let's go off the  
 25 record for just a moment.

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1 (Discussion held off the record.)  
 2 **PRESIDING OFFICER:** I'm sorry, back  
 3 on the record.  
 4 **MR. STUCKY:** As a housekeeping  
 5 matter, at this point, we're moving to  
 6 admit Exhibit 60.  
 7 **PRESIDING OFFICER:** Okay. Any  
 8 objections?  
 9 **MR. OLEEN:** Let me just see what  
 10 that is again, sorry.  
 11 **MR. MCLEOD:** I think these were the  
 12 hydrographs, and maybe the witness could go  
 13 into a little more detail about how and by  
 14 whom the different aspects of the  
 15 hydrographs were produced.  
 16 **MR. STUCKY:** Mr. Boese, did you help  
 17 create these hydrographs?  
 18 **A. Yes, and it's mostly in the sense that I**  
 19 **reviewed those. But -- well, I collected a lot**  
 20 **of the data for these hydrographs, I'm sorry,**  
 21 **yes.**  
 22 **MR. STUCKY:** In fact, all the data  
 23 shown in these hydrographs is either  
 24 collected by you or Mr. Randolph, in  
 25 addition to numbers that were pulled out of

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1 the City proposal; is that right?  
 2 **A. Yeah. I -- I do believe that maybe some of the**  
 3 **early on water levels were actually compiled**  
 4 **from the USGS, which would obviously be a**  
 5 **respectable entity to receive water level data**  
 6 **from. I think when they were first put in, USGS**  
 7 **might have taken some water level measurements**  
 8 **that are included in this data.**  
 9 **So other than that, I started measuring**  
 10 **these when they were installed, shortly after**  
 11 **they were installed. I measured them myself**  
 12 **until Mr. Randolph took over, I believe -- took**  
 13 **over for me in October of 2005, he would have**  
 14 **started. Every point of data collection from**  
 15 **2005 in October would have been his. Prior to**  
 16 **that would have been mine, with maybe USGS at**  
 17 **the beginning, so the data is good.**  
 18 **MR. STUCKY:** And Mr. Randolph is  
 19 available, we can call him in if we need to  
 20 lay any further foundation on these  
 21 hydrographs as far as any data he  
 22 collected, he is in the office today, he is  
 23 available to call. We listed him as one of  
 24 our witnesses, we're prepared to call him  
 25 if there's any question as to the

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1 foundation of these hydrographs. But,  
 2 again, I move to admit these hydrographs  
 3 into evidence.  
 4 **MR. MCLEOD:** And one more question,  
 5 the witness may have said but the  
 6 bedrock --  
 7 **A. Uh-huh.**  
 8 **MR. MCLEOD:** -- line, where is that  
 9 being derived from?  
 10 **A. So the bedrock elevation, and I want to note we**  
 11 **put approximate, were based on the drill logs**  
 12 **for the index monitoring wells, and we've looked**  
 13 **at some of those. We have drilling logs that**  
 14 **indicate at what depth below land surface**  
 15 **bedrock was encountered. Those are made by**  
 16 **subtracting the land surface elevation, which is**  
 17 **identified at the top, and I'm almost certain**  
 18 **those are all surveyed elevations because when**  
 19 **those index wells are put in, I believe USGS**  
 20 **came out and did a survey for elevation, so it's**  
 21 **simple as taking the land surface elevation and**  
 22 **subtracting the bedrock that's indicated on the**  
 23 **IW drilling log.**  
 24 **I can say my former hydrogeologist**  
 25 **researched those and also looked at the**

1 individual notes from the City's consultant,  
2 which was a licensed geologist, to verify those,  
3 just to ensure that what was on the drill log  
4 was an accurate representation of what the drill  
5 notes were. I think he may have found, you  
6 know, a foot or two variance here and there  
7 because the geologist would say, you know,  
8 beginning to encounter bedrock and the driller  
9 might have counted a little bit of material  
10 below that. That's why we put approximate. I  
11 mean, of course, when you're drilling with a  
12 drill rig, it's -- can be approximate by a foot  
13 or two based on where the kelly table is set and  
14 where the drill stem sets.

15 So I'm confident the data is good as far as  
16 the -- our data that we collected. The other  
17 figures that are on there, the lines of the  
18 minimum drought elevation, existing minimum  
19 index level, and the proposed come from the  
20 City's proposal; they're just represented there  
21 on what's in the City's table as far as  
22 elevation. So ...

23 MR. MCLEOD: City has no objection  
24 to admission of the exhibit.

25 PRESIDING OFFICER: Okay, thank you.

1 So Exhibit 60, District 60 will be  
2 admitted.  
3 MR. STUCKY: Mr. Boese, as another  
4 housekeeping matter, I think sometime  
5 before I started icing my shoulder, you  
6 mentioned something about some safe yield  
7 calculations you performed on the withdrawn  
8 permits of the City, you stated something  
9 about that; is that correct?

10 A. We were reviewing the ASR Phase II safe yield  
11 calculations that I ran on, I believe, on  
12 December 5th of 2019 for each of the 30 ASR  
13 permits that are subject to this proposal.

14 MR. STUCKY: Which exhibit was that?

15 A. 59, I believe. But if you'll give me a second,  
16 I'll verify it. It is Exhibit 59. It's  
17 Exhibit 59.

18 MR. STUCKY: Mr. Boese, I think  
19 before I faded out of consciousness, I  
20 heard a question asked about the fact that  
21 in the proposal the City is articulating or  
22 arguing that they can withdraw more than  
23 18,000 acre-feet of recharge credits per  
24 year in their proposal. Is that what part  
25 of your testimony was?

1 the connection of the two.

2 A. Can I -- can I speak?

3 MR. STUCKY: Yes.

4 PRESIDING OFFICER: Yes.

5 A. We may have to have the court reporter check, 59  
6 may have been admitted, but there was another  
7 set of evaluations that was based on the City's  
8 applications that have been withdrawn that are  
9 also an exhibit, and I think that was objected  
10 to --

11 MR. STUCKY: That's what I'm trying  
12 to ask you about.

13 A. -- based on relevance.

14 MR. STUCKY: Yeah, that's the  
15 exhibit I asked you to find.

16 A. Okay, yeah, 59 was the safe yield that I just  
17 reviewed with Ms. Wendling.

18 PRESIDING OFFICER: That's what I  
19 thought. I thought that was already in.

20 A. I believe 59 is, but I think Mr. Stucky is  
21 referring to another set of evaluations that are  
22 also in our exhibit notebook for the 30  
23 existing --

24 MR. STUCKY: Yeah.

25 A. -- the 30 applications that were withdrawn and I

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1 think we're --

2 **MR. STUCKY:** Please find that

3 exhibit --

4 **A. Okay.**

5 **MR. STUCKY:** -- for me, Mr. Boese.

6 **A. Yeah. I don't have the advantage of having our**

7 **table of contents, but I will find it here.**

8 **MR. STUCKY:** Can we go off the

9 record --

10 **PRESIDING OFFICER:** Yes.

11 **MR. STUCKY:** -- very briefly?

12 **PRESIDING OFFICER:** Yes.

13 (Thereupon, a recess was taken;

14 whereupon, the following was had.)

15 **PRESIDING OFFICER:** Okay. Back on

16 the record.

17 **MR. STUCKY:** At this point, now that

18 we've located Exhibit 41, which I would

19 proffer for the record is what Mr. Boese

20 testified as to earlier as being safe yield

21 calculations on the permits that were

22 applied for by the City and then withdrawn

23 shortly before this hearing, that's what

24 that exhibit entails, I ask that that

25 exhibit now be admitted.

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1 **MR. MCLEOD:** Same objection as

2 before, I think.

3 **MR. STUCKY:** Can I -- are you

4 objecting? Okay. Speaking to that

5 objection, Ms. Owen --

6 **PRESIDING OFFICER:** I'm sorry, I'm

7 not sure I'm looking at the right exhibit.

8 **A. Can I -- can I speak?**

9 **PRESIDING OFFICER:** Please do, yes.

10 **A. Okay.**

11 **PRESIDING OFFICER:** Describe --

12 describe Exhibit 41 just so we all know.

13 **A. So Mr. Stucky said that these were safe yield**

14 **analysis for the 30 ASR Phase II applications**

15 **that were withdrawn, which were file 48,704**

16 **through 48,733. They include safe yield**

17 **evaluations. They are a more somewhat thorough**

18 **review of the ASR Phase II applications that**

19 **were subsequently dismissed by the applicant.**

20 **They also include spacing evaluations, as well**

21 **as safe yield, with essentially a description of**

22 **each application as far as how much the**

23 **application is requesting, the rate, how much**

24 **quantity is requesting, the rate, again, the**

25 **location and then a summary of the safe yield**

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1 **evaluation and the spacing evaluation. And if I**

2 **could help you look at what I'm talking about,**

3 **if you would turn back --**

4 **PRESIDING OFFICER:** That would be

5 great.

6 **A. So the first page is just a summary, this was**

7 **provided to my board of directors of those 30**

8 **applications while they were still pending. The**

9 **next page is a map that shows both the existing**

10 **ASR Phase I and Phase II permits in blue dots,**

11 **as well as the surface intakes and bank storage**

12 **well locations. And then the red dots were the**

13 **proposed new well locations.**

14 **PRESIDING OFFICER:** Okay.

15 **A. The next one is also a map with some more detail**

16 **on it, which just basically has the file numbers**

17 **of the proposed applications. The next page,**

18 **then, is the safe yield evaluation, a map,**

19 **followed by the spreadsheet of that safe yield,**

20 **followed by the spacing evaluation, which would**

21 **again show the 660- and 1320-foot radiuses**

22 **around that proposed well, with a, I would say**

23 **an abbreviated short summary of the application**

24 **right below that map where it says appropriation**

25 **application and lists the file number, the**

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1 **location, the safe yield results, and the**

2 **spacing results. There is one of those sets of**

3 **documents for all 30 applications, so it does**

4 **include the safe yield evaluation and also the**

5 **spacing, I think, would be the crux of it.**

6 **PRESIDING OFFICER:** Okay. And these

7 are being offered in connection to what,

8 I'm sorry, I'm not following?

9 **MR. STUCKY:** The position is, Your

10 Honor, that the City's proposal presupposes

11 that these applications were applied for

12 based on the fact that they're seeking

13 credits greater than 18,000 per year. So

14 right now only 18,000 of credits are

15 allowed per year, their proposal is

16 predicated on the notion that they're

17 actually going to get more each year than

18 that 18,000.

19 And so because their proposal is

20 predicated on that notion and presupposes

21 that these additional permits will be

22 applied for, they're relevant now to

23 demonstrate the further nature of the

24 over-appropriation of the aquifer, to

25 demonstrate that new safe yield would not

1 be met if these assumed permits that the  
2 proposal assumes would be applied for were  
3 actually applied for, and so I think  
4 they're relevant now.  
5 **MR. MCLEOD:** And I think Counsel is  
6 in error, Madam Presiding Officer, because  
7 he's premising all of that line of stuff on  
8 having found a 1,907 acre-foot variance  
9 between a number in a table and the  
10 18,000 acre-foot total that Mr. Boese came  
11 to from the credits in the ASR permits, the  
12 annual -- the annual diversion limit,  
13 counting only the ASR Phase II permits.  
14 Now, the ASR Phase I withdrawal rights  
15 would, I think -- and I believe the witness  
16 has recognized, would account for more than  
17 that 1,907 acre-foot variance. And I want  
18 to be -- I want to be clear about  
19 something, although the City has said in  
20 its proposal that it does not intend to  
21 modify the 1993 levels for Phase I and will  
22 not withdraw AMCs from Phase I, that  
23 doesn't mean the City won't use existing  
24 authority to withdraw physical recharge  
25 credits from Phase I. And so the

1 Mr. Boese, I think, is saying is that if we  
2 used only authority to withdraw under the  
3 Phase II permits, we could only get to  
4 18,000 acre-feet. But we have not said  
5 that we'll only use authority to withdraw  
6 under the Phase II permits.  
7 **PRESIDING OFFICER:** Is that  
8 applicable to everything else in your  
9 proposal, that that might include pumping  
10 from Phase I in some respect?  
11 **MR. MCLEOD:** I'm not sure as to the  
12 scope of that question.  
13 **PRESIDING OFFICER:** Because up until  
14 this time, my understanding was the  
15 proposal only discussed Phase II and in no  
16 way whatsoever included any change to or  
17 usage of Phase I.  
18 **MR. MCLEOD:** It includes no change  
19 to Phase I. But I don't think that we have  
20 said at any point that we're just not going  
21 to use any of the rights in Phase I that  
22 are existing rights. And that's what  
23 his -- that's what his postulate assumes.  
24 The road that he's trying to take you down  
25 is to say that, well, if we only look at

1 conclusion that Counsel has put together,  
2 it doesn't have a basis, he can't get where  
3 he's going by virtue of that 1,907  
4 acre-foot variance.  
5 **PRESIDING OFFICER:** So are you  
6 saying that, I think it's table 2-5, this  
7 value that was over 19,000 acre-feet  
8 should -- are you saying that that would  
9 include Phase I pumping?  
10 **MR. MCLEOD:** It could include Phase  
11 I authority to withdraw credits. Would  
12 include Phase I authority to withdraw  
13 credits.  
14 **PRESIDING OFFICER:** But is that what  
15 the table is set out to depict because I  
16 thought that was only for Phase II?  
17 **MR. MCLEOD:** The table is set out to  
18 depict City pumping needs and demands, and  
19 that's what that -- that's what that figure  
20 is showing is what the City would need from  
21 credits, in addition to its water from  
22 Cheney, in that year in order to get past  
23 with meeting its demand. So the City would  
24 need, according to that space on the table,  
25 that 19,907 acre-feet, and what -- what

1 the annual withdrawals that could be done  
2 strictly under the Phase II withdrawal  
3 authority, the City would be 1,907  
4 acre-feet short here and, therefore, let's  
5 resurrect all the material about these 30  
6 permit applications that have been  
7 withdrawn, assuming that the City must  
8 really mean to make all 30 of those  
9 applications, because I guess he thinks we  
10 would need those 30 applications to get  
11 another 1,907 acre-feet --  
12 **PRESIDING OFFICER:** Okay.  
13 **MR. MCLEOD:** -- which I will tell  
14 you is also -- the math doesn't come up.  
15 **PRESIDING OFFICER:** That's not my  
16 understanding of the way he's described  
17 what he wants to do with these. But,  
18 again, it's a different matter if you're  
19 now saying that something in this proposal  
20 might reflect usage under Phase I because  
21 that has not been my understanding up to  
22 this point.  
23 **MR. MCLEOD:** Well, that -- that  
24 19,907 acre-feet would need 1,907 acre-feet  
25 of credits from Phase I, that number in



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1 that table would.  
 2 **PRESIDING OFFICER:** Mr. Oleen, are  
 3 you --  
 4 **MR. STUCKY:** At this point --  
 5 **MR. OLEEN:** Well, I'm just weighing  
 6 in, I don't know that it matters, the cover  
 7 letter to the proposal says, the City's not  
 8 requesting any modification to the permits  
 9 associated with ASR Phase I infrastructure.  
 10 But I guess I wondered if that spoke to  
 11 Mr. McLeod's point, that's not saying they  
 12 won't take any recharge credits that they  
 13 may currently be allowed to --  
 14 **PRESIDING OFFICER:** Well, and I'm  
 15 not trying to read into this any commitment  
 16 that the City would not pump Phase I, I'm  
 17 not trying to read that into it. I'm just  
 18 saying my understanding that the  
 19 reflections in the proposal, I have not yet  
 20 heard someone describe any of the  
 21 calculations or modeling or anything  
 22 include use under Phase I, other than the  
 23 kind of things that Mr. Romero was talking  
 24 to us about in some of his -- or, no,  
 25 anyway that wasn't Phase I, that was still

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1 Phase II. So to me, this raises a whole  
 2 new factual issue, if that might be  
 3 included in the proposal, because that's  
 4 not been my understanding so far.  
 5 **MR. MCLEOD:** So, again, I think that  
 6 the presence of that 1,907 acre-feet  
 7 that -- that wouldn't be covered by the  
 8 18,000 acre-feet in the Phase II permits  
 9 would have to be acre-feet withdrawal  
 10 authority of Phase I, it would have to be,  
 11 so -- so, yes, there's that involvement,  
 12 over that eight-year period, there would  
 13 need to be 1,907 acre-feet of credits  
 14 from -- from Phase I credits.  
 15 **PRESIDING OFFICER:** Mr. Stucky.  
 16 **MR. STUCKY:** Thank you, Your Honor.  
 17 So either at best, Mr. McLeod has become a  
 18 witness in this -- a witness in his own  
 19 case and disqualifies him as an attorney  
 20 with this new testimony based on becoming a  
 21 witness --  
 22 **MR. MCLEOD:** I object to that, I  
 23 have not testified to a blame thing.  
 24 **PRESIDING OFFICER:** Okay. Let's  
 25 settle down.

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1 **MR. STUCKY:** Okay. That was not --  
 2 **PRESIDING OFFICER:** Settle down.  
 3 **MR. STUCKY:** -- trying to be  
 4 inflammatory, I'll get to the point here.  
 5 **PRESIDING OFFICER:** Get to the  
 6 point.  
 7 **MR. STUCKY:** The point is, well, at  
 8 best -- this would be of limited relevance  
 9 at best. I still think it's relevant  
 10 because this is speculative now whether or  
 11 not even from the City's standpoint this  
 12 variance, and to me, 1900 acre-feet is of  
 13 significance, this perspective of whether  
 14 this variance is due to ASR II credits or  
 15 ASR I credits, I think is free for argument  
 16 at this point, obviously, and so even if  
 17 this exhibit is of limited relevance, I ask  
 18 that it be admitted so ...  
 19 **PRESIDING OFFICER:** Well, I'm still  
 20 trying to figure out the relevance that it  
 21 does have. I -- I can see that it's  
 22 further documentation establishing  
 23 over-appropriation of the area, but I'm  
 24 kind of missing what else it might be  
 25 relevant to. And I'm sorry if I'm not

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1 following.  
 2 **MR. ADRIAN:** Well, these  
 3 applications, as was mentioned earlier,  
 4 were filed all at the same time when this  
 5 proposal was filed, it was all one filing  
 6 by the City. And then I think the City  
 7 recognized, if I will repeat what I heard  
 8 Mr. Pajor say, the City recognized that  
 9 these applications would further complicate  
 10 the hearing, and so in order to simplify  
 11 this hearing process, which didn't really  
 12 happen, but in order to simplify this  
 13 hearing process, they simply withdrew those  
 14 30 applications to focus in on the two  
 15 issues that are really here.  
 16 But what that says is that this is a  
 17 normal and natural result of what we're  
 18 going to face if -- if the approval -- if  
 19 the proposal is approved, then these  
 20 applications become highly relevant. And  
 21 so that's why -- and I think Mr. Boese did  
 22 the analysis before they were withdrawn,  
 23 but that's why he did all the work on the  
 24 analysis of those. But they are a normal  
 25 and natural result of -- of this proposal

1 being adopted.  
2 **PRESIDING OFFICER:** So bear with me  
3 and tell me if I have misunderstood. There  
4 are in my mind two groups of, well, of  
5 files that Mr. Boese has done safe yield  
6 evaluations for in regards to this proposal  
7 as a general concept. One group were these  
8 applications that we're talking about with  
9 Exhibit 41 that were new applications that  
10 were filed that were subsequently  
11 withdrawn. The other group of safe yield  
12 evaluations that he did, if I understand  
13 this correctly, and I hope you're  
14 listening.

15 **A. I'm listening. I'm sorry, I'm listening.**

16 **PRESIDING OFFICER:** The other group  
17 of safe yield evaluations were on the  
18 actual Phase II recharge recovery wells  
19 that are the subject of the Phase II  
20 approval. Am I following that correctly?

21 **A. Yes, I -- can I be a little more -- a little  
22 more detail?**

23 **PRESIDING OFFICER:** Yes, because I  
24 need to understand exactly what documents  
25 we're talking about in order to rule on

1 **area that I did not have any safe yield**  
2 **calculations in, and those are all the red dots**  
3 **particularly on the southern one-third or**  
4 **one-fourth or so. The ones that are asked to be**  
5 **admitted would then show what the safe yield is**  
6 **in that area also.**

7 **We didn't have much there because most of**  
8 **the original 30 applications we were looking at**  
9 **today were the -- more to the northern portion;**  
10 **a lot of these are to the southern, which we**  
11 **didn't have any data. If you just look at the**  
12 **safe yields we have today, there is no data in**  
13 **50 -- Exhibit 59 for the southern portion of the**  
14 **basin storage area.**

15 **MR. STUCKY:** Mr. Boese, could you  
16 turn to page 3-6 of the City's proposal?

17 **A. Page 3-6?**

18 **MR. STUCKY:** Yeah, page 3-6 of the  
19 City's proposal. Is it missing from your  
20 notebook?

21 **A. There is -- I go from 3-12 to 4-1. What am I**  
22 **missing here?**

23 **MR. STUCKY:** The exhibit is missing  
24 a bunch of the proposal, I guess. There's  
25 a page 3-6.

1 these objections.  
2 **A. Well, I think they're relevant for a number of**  
3 **reasons, one, that I don't think the City has,**  
4 **and I'm trying to -- that's what I was trying to**  
5 **do and I wasn't not paying attention to, I don't**  
6 **think the City has very many recharge credits**  
7 **available in the Phase I, what we consider the**  
8 **Phase I cells. We can maybe evaluate that if we**  
9 **had a little bit of time.**

10 **But also this proposal is -- is obviously**  
11 **related to the ASR Phase II applications, but**  
12 **it's clear in the proposal that if these**  
13 **concepts are approved, they would be applicable**  
14 **to new applications also. The lowering of the**  
15 **minimum index level wouldn't be just per permit,**  
16 **it would be for cell. And the AMC concept would**  
17 **then be allowed for future ASR application. I**  
18 **think there's some statements that have been**  
19 **made to that, that this -- we're looking at**  
20 **these 30 today, but these concepts would be**  
21 **applicable to future applications also.**

22 **And then I'd make one more point if you**  
23 **look at the map that is with 41, on the second**  
24 **page, I think these are relevant because they --**  
25 **there was an area that -- in the basin storage**

1 **A. Oh, I thought you said 3-16.**

2 **MR. STUCKY:** No, 3-6.

3 **A. I'm sorry. Boy, it's getting late. Okay.**  
4 **Okay, I'm sorry, Dave, where are you at?**

5 **MR. STUCKY:** Page 3-6 of the City's  
6 proposal at the top, it refers to future  
7 wells, is that part of what you were  
8 talking about?

9 **A. What -- what number are you looking at?**

10 **MR. ADRIAN:** Number 2.

11 **A. Okay. Yes. That's talking about future bank**  
12 **storage wells. It's in --**

13 **MR. STUCKY:** I'll find the cite, but  
14 there's a cite in here, is there not,  
15 Mr. Boese, where it talks about how this  
16 proposal applies to future --

17 **A. That's my recollection, and I'm trying to --**

18 **MR. STUCKY:** We'll find the cite.

19 **MR. MCLEOD:** Madam Hearing Officer,  
20 I just feel the need to point out as well,  
21 these applications as to -- I mean, these  
22 30 applications that were withdrawn and the  
23 safe yield calculations concerning them,  
24 even if we were to posit that those  
25 applications would be refiled with a

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1 favorable decision in this case, any such  
 2 favorable decision would mean that those  
 3 new applications would not be subject to  
 4 safe yield. And so I'm not seeing what --  
 5 what, other than a rabbit hole in the  
 6 record, we're doing admitting safe yield  
 7 calculations on 30 dismissed applications  
 8 on the theory that they might be refiled  
 9 someday not subject to safe yield. I see  
 10 no possible relevance in any of that, it's  
 11 just more fog and confusion.  
 12 **MR. STUCKY:** I think we've made a  
 13 pretty strong argument why safe yield would  
 14 apply to this proposal.  
 15 **MR. MCLEOD:** But if -- if the City's  
 16 position wins out here, it won't. I mean,  
 17 that is an inherent facet of what we're  
 18 discussing here. And if the City's  
 19 position doesn't win out here, those  
 20 applications can't -- can't be approved if  
 21 they're refiled. The City doesn't contest  
 22 that those applications could be approved  
 23 if they were subject to safe yield; we know  
 24 they wouldn't be approved if they're  
 25 subject to safe yield. And they won't be

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1 refiled if -- if you find that AMCs are not  
 2 recharge credits and are subject to safe  
 3 yield.  
 4 **PRESIDING OFFICER:** Well, something  
 5 Mr. Boese said is of concern to me, and I  
 6 do recall at least the implication, if not  
 7 the actual obvious testimony, that the  
 8 applications were dismissed to simplify  
 9 this process and to let the principles of  
 10 the proposal be resolved first. And if,  
 11 indeed, approval of this proposal approves  
 12 these principles for future applications,  
 13 that is relevant, and that's something that  
 14 matters to me and that I think bears on  
 15 whether this is -- this particular exhibit  
 16 should be admitted. So there seems to be  
 17 some vague -- maybe not even vague but  
 18 memory that provision is included in the  
 19 proposal that this would apply to future  
 20 applications. I need that question  
 21 resolved.  
 22 **MR. MCLEOD:** Well, I mean, obviously  
 23 if a decision is made about lowering the  
 24 bottoms for ASR Phase II, that would apply  
 25 to future ASR II applications; and if a

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1 decision is made about AMCs one way or the  
 2 other, that decision will apply to future  
 3 ASR Phase II applications.  
 4 And for the record, to fill the point  
 5 out since Mr. Pajor is not here to do it,  
 6 my understanding of his comments on the  
 7 complication issue was simply that it  
 8 looked like the case would never get out of  
 9 the clutches of the District if those 30  
 10 applications were not withdrawn because  
 11 there was no way to make the District  
 12 actually issue its recommendations on  
 13 those -- on those applications in order to  
 14 ever move this case. And that was my  
 15 understanding of why those 30 applications  
 16 were dismissed in order to be able to ever  
 17 get to this hearing at all.  
 18 **MR. ADRIAN:** Well, I certainly  
 19 disagree with the characterization of the  
 20 clutches of the District. What I recited  
 21 earlier was what I recall him saying, and  
 22 that was to simplify the process and focus  
 23 in on these two issues.  
 24 **PRESIDING OFFICER:** Okay. Well, I  
 25 don't recall the -- I don't recall having

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1 the impression that you described, but I  
 2 don't have the transcript available to me  
 3 to review. But nonetheless, if resolving  
 4 this proposal resolves future applications  
 5 that may get filed under Phase II proposal,  
 6 then I find potential safe yield --  
 7 evaluations of -- some safe yield  
 8 evaluations done by Mr. Boese at other  
 9 locations within the well field to be  
 10 relevant. And I understand your  
 11 objections, but I am going to admit GMD 41.  
 12 Thank you for allowing me time to make  
 13 notes, Mr. Stucky.  
 14 **MR. STUCKY:** We don't -- Mr. Adrian  
 15 was standing up behind me, and that's  
 16 always a bad time when the mighty Tom  
 17 Adrian is standing behind me at my  
 18 shoulder, but we've conferred and I think I  
 19 can speak for both of us that we don't see  
 20 the need to ask this witness further  
 21 questions. However, I reserve the right to  
 22 ask additional questions in the event other  
 23 parties are allowed to ask additional  
 24 questions, notwithstanding the fact that we  
 25 have not.

1 **PRESIDING OFFICER:** Mr. McLeod, I  
2 think that brings us back to you.  
3  
4 **CROSS-EXAMINATION**  
5 **BY MR. MCLEOD:**  
6 Q. Mr. Boese, would you turn to page 3-6 in the  
7 City's proposal?  
8 **A. Okay.**  
9 Q. And on that page, Mr. Boese, will you please  
10 read into the record the paragraph, which is  
11 also a sentence, number 3.  
12 **A. The rate of accrual of all recharge credits --**  
13 **I'm sorry, was it number 2 or 3? Am I on the**  
14 **right one?**  
15 Q. Number 3, please.  
16 **A. I'm sorry. ASR Phase I RRW's are not eligible**  
17 **to receive AMCs, only physical recharge at**  
18 **Phase I RRW's or recharge basins will result in**  
19 **the development of an ASR credit.**  
20 Q. Okay. So that part of the proposal, do you  
21 understand that as saying that the City's not  
22 asking for AMCs in the phase -- in respect to  
23 the Phase I recharge facilities?  
24 **A. Is there a legend that describe what RRW is? I**  
25 **think I know what that means but ...**

1 Q. So if I were to suggest to you that RRW meant  
2 recharge and recovery well, would that assist  
3 you in responding?  
4 **A. Well, yeah, I think there's a -- I think there's**  
5 **a list of abbreviations - there is, recharge and**  
6 **recovery well - I would agree with your**  
7 **statement that under these proposal -- or**  
8 **proposal conditions that are listed that ASR**  
9 **Phase I would not be eligible to receive AMCs**  
10 **with both recharge and recovery wells or**  
11 **recharge basins.**  
12 Q. But the last -- the last clause, the second half  
13 or so of the sentence, if you will, does say --  
14 it does -- does evidence the physical recharge  
15 of the Phase I recharge and recovery wells or  
16 recharge basins will result in the development  
17 of ASR recharge credits, correct?  
18 **A. That's what it states, yes.**  
19 Q. So part of the proposal has never been giving up  
20 physical recharge credits from the ASR I  
21 facilities, has it?  
22 **A. Giving up, you mean cease -- what do you mean by**  
23 **giving up? Giving up would mean --**  
24 Q. Getting rid of?  
25 **A. Giving -- not being able -- I'm sorry.**

1 Q. Not being able to accumulate a withdrawal,  
2 that's never been part of the proposal, has it,  
3 as to physical recharge credits in Phase I?  
4 **A. I think that sentence might have been a little**  
5 **confusing. This means to me that they can --**  
6 **the City can only obtain physical -- or recharge**  
7 **credit by physical injection in the Phase I**  
8 **facilities, is that what you meant?**  
9 Q. Right, but it doesn't say the City is giving up  
10 that ability, does it?  
11 **A. Oh, no, it doesn't say that -- yeah, no, the**  
12 **City can do physical recharge all they want**  
13 **under the existing permit conditions as long as**  
14 **they don't violate any permit conditions on --**  
15 **on Phase I.**  
16 Q. Now, Mr. Boese, there was some discussion in  
17 DWR's questioning with respect to any other  
18 minimum desirable streamflow analyses that you  
19 had ever done, or other applications or  
20 proposals, and one of the things that you  
21 identified was the Bentley well field reserve  
22 where I believe you testified that some cfs  
23 triggers were developed based on minimum  
24 desirable streamflow. And my question for you,  
25 Mr. Boese, weren't the wells in that Bentley

1 reserve, weren't those bank storage wells?  
2 **A. Four out of six of them are bank storage, two**  
3 **are groundwater.**  
4 Q. And as to the ones that weren't bank storage  
5 wells, were there any considerations of cfs  
6 triggers for the ones that weren't bank storage  
7 wells?  
8 **A. I -- I do not believe that there were any MDS**  
9 **considerations for the groundwater ones, but,**  
10 **again, that was, boy, I have to think, 14 years**  
11 **ago or so. But I -- I specifically remember the**  
12 **four bank storage wells -- let me back up.**  
13 **Originally, they were all planned to be bank**  
14 **storage, and I think as time moved on, the City**  
15 **decided four of them would be bank storage, they**  
16 **had to be within, I believe, 300 feet of the**  
17 **centerline of the Arkansas River, and two of**  
18 **them ended up being groundwater, and they**  
19 **were -- ended up being, I believe, a quarter of**  
20 **a mile or more from the Arkansas River. So that**  
21 **was a distinction in the relationship of**  
22 **proximity to the Arkansas River. So four bank**  
23 **storage with flow triggers on the Big Ark, two**  
24 **groundwater and I don't believe they have any**  
25 **flow triggers on those.**

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1 Q. And the bank storage wells, Mr. Boese, they  
 2 needed to be in proximity to the river because  
 3 that is critical to their ability to function as  
 4 bank storage wells, isn't it?  
 5 **A. Yes, absolutely.**  
 6 Q. And the reason the bank storage wells needed cfs  
 7 triggers is the bank storage wells are supposed  
 8 to take water above base flow; isn't that  
 9 correct, Mr. Boese?  
 10 **A. That's the general concept of a bank storage**  
 11 **well. There's a definition we can read, but I**  
 12 **would agree with your characterization.**  
 13 Q. And so the purpose of those cubic feet per  
 14 second triggers that were derived in the whole  
 15 analysis of the Bentley well field reserve, the  
 16 purpose of that was to help define and protect  
 17 base flow, and it had nothing to do with the  
 18 minimum desirable streamflow analysis, did it,  
 19 sir?  
 20 **A. Well, you lost me there, can you break that into**  
 21 **one or more sentences?**  
 22 Q. The purpose of those cfs triggers was to define  
 23 and protect base flow, correct, because the  
 24 Bentley well field bank storage wells were not  
 25 supposed to take water unless it was above base

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1 flow, correct?  
 2 **A. I think that's a general statement, it was to**  
 3 **determine what the minimum base flow had to**  
 4 **be -- or minimum streamflow had to be so that it**  
 5 **was only taking bank storage water.**  
 6 Q. So that was -- that was a base flow analysis; it  
 7 wasn't a minimum desirable streamflow analysis,  
 8 was it?  
 9 **A. Well, I would disagree with that because I**  
 10 **think, as maybe some in the audience know, and**  
 11 **what I believe is there is not a regulatory MDS**  
 12 **on the Big Arkansas River at Bentley. So that**  
 13 **was what was trying to be determined is what**  
 14 **that should be set at as MDS; it was not**  
 15 **official, but the reason behind that was being**  
 16 **considered was to protect MDS, flow had to be**  
 17 **above MDS.**  
 18 **So I think there's two components to that.**  
 19 **You don't want pumping from bank storage when**  
 20 **it's at MDS or below because that would impact**  
 21 **MDS. At the same time, you don't want pumping**  
 22 **below MDS because then you're not getting bank**  
 23 **storage water. So I think there's two**  
 24 **components to that, making sure that you're**  
 25 **getting bank storage above MDS and also**

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1 **protecting MDS so you can't pump it below what**  
 2 **was established. And there was a lot of**  
 3 **discussion about 80 percent exceedance or**  
 4 **90 percent exceedance, and DWR settled on**  
 5 **90 percent exceedance. I think it does two**  
 6 **things.**  
 7 Q. So in earlier testimony, another witness --  
 8 another witness referred to above base flow as  
 9 basically flood stage. Do you share that  
 10 understanding?  
 11 **A. No, not necessarily. It can -- flood stage is**  
 12 **obviously above base flow, but base flow is**  
 13 **based on a minimum cubic feet per second.**  
 14 **Anything above that is above base flow.**  
 15 Q. And are you meaning to testify that you think  
 16 that base flow and minimum desirable streamflow  
 17 are the same concept for purposes of the Bentley  
 18 well field reserve, do you think that's the same  
 19 thing there?  
 20 **A. I guess I'd have to give that some -- some**  
 21 **thought. Again, you're asking for something**  
 22 **that was 14 years ago. I believe we were trying**  
 23 **to figure out what minimum desirable**  
 24 **streamflow -- if it was established, and it's**  
 25 **not at the Bentley gage, if it was established,**

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1 **what would minimum desirable streamflow be.**  
 2 **Same way on the Little Ark, Little Ark**  
 3 **minimum desirable streamflow was 20 cubic feet**  
 4 **per second, and that's what is used for the**  
 5 **trigger for the ASR Phase I applications from --**  
 6 **during the spring, fall, and winter months; it's**  
 7 **higher in the summer because there's other users**  
 8 **that have to be accounted for. So the MDS is**  
 9 **what's used for the trigger flow on the Little**  
 10 **Ark, it's the trigger that's used on the Little**  
 11 **Ark for Phase II at the Valley Center gage, plus**  
 12 **those other users that are between the intake**  
 13 **and the Valley Center gage.**  
 14 Q. And so you're saying you think that it's also  
 15 what was used for determining the trigger points  
 16 on the Bentley reserve bank storage wells?  
 17 **A. The MDS?**  
 18 Q. Is that what you think, Mr. Boese?  
 19 **A. I do think that's what it was, but, again, I'm**  
 20 **going to caveat that was 14 years ago, I'd have**  
 21 **to go back and look at the files. I think you'd**  
 22 **be surprised I might have hit the trigger right**  
 23 **on the nose at 165, and I haven't looked at it**  
 24 **for quite sometime, but I think it's 165 cubic**  
 25 **feet per second.**

1 Q. Mr. Boese, let's talk about river nodes a little  
2 bit since those came up. I believe you thought  
3 that the river nodes were the other means by  
4 which you effectively do an MDS component of  
5 analysis for applications in the District. The  
6 safe yield regulations, did they always include  
7 the concept of base flow nodes?  
8 **A. Have they always?**  
9 Q. Have they always?  
10 **A. No.**  
11 Q. And, Mr. Boese, at some point, somebody figured  
12 out that if you had a well proximate to the  
13 river, a pumping well, groundwater well and the  
14 river was actually regularly taking water from  
15 that area of the aquifer that there was an  
16 impact on the well, right, the same as if some  
17 other competing well user was taking that water  
18 that's going off into the river?  
19 **A. An impact on the well?**  
20 Q. An impact on safe yield because there's water  
21 going out into the aquifer in the proximity of  
22 the well that's applying for -- for permit?  
23 **A. I -- I'm not -- I'm really not trying to be**  
24 **difficult, I didn't understand your question.**  
25 **We talked about safe yield and all the sudden we**

1 **went to impact to a well, can you --**  
2 Q. Okay.  
3 **A. -- can you help me out there a little bit?**  
4 Q. Trying to help you develop the concept of river  
5 nodes, there are folks here that don't deal with  
6 them all the time.  
7 **A. Okay.**  
8 Q. So under the old safe yield regulations, if you  
9 had a well, a well site, a place where somebody  
10 is applying for a permit and it's proximate to  
11 the river and the river there is a gaining  
12 stream, it's taking water from the aquifer on a  
13 regular basis. Now, if you don't account for  
14 that water that the river is taking from the  
15 aquifer there and if you just draw your circle  
16 and look at the wells that are taking water in  
17 that circle and you compete your -- you compute  
18 your safe yield based on that, then what's going  
19 to be the result of that for the well that -- if  
20 the well gets permitted based on simply what the  
21 other wells are taking and without accounting  
22 for what's going out into the river?  
23 **A. Well, if the river -- if you added in the water**  
24 **that you're losing to the river and then that**  
25 **would exceed safe yield and combined with all**

1 **the other users, that would not have met our**  
2 **current safe yield, so there could be an impact**  
3 **to that well.**  
4 Q. So in the old days before you had river nodes  
5 and people weren't accounting for the water  
6 going out into the river, that well would have  
7 met safe yield, would it not?  
8 **A. It depends on the rest of the area of**  
9 **consideration. It's a full two-mile circle so**  
10 **it depends. If the river is the only thing in**  
11 **the circle, probably not. If it's the river and**  
12 **some other permitted wells, you got to do an**  
13 **evaluation on every single point. I can't -- I**  
14 **can't give you a general answer to that.**  
15 Q. Was the point of adding river nodes to the  
16 calculation to make sure that you accounted for  
17 that water that's going out of the aquifer into  
18 the river so that you don't inadvertently  
19 approve a well that if you -- that if you were  
20 to account for the water going out into the  
21 river is not meeting safe yield?  
22 **A. I think it was two purposes, one is I think what**  
23 **you described, to make sure you're accounting**  
24 **for that in a safe yield, and it's also to**  
25 **protect that streamflow from too much**

1 **development, 'cause conversely what you said if**  
2 **we allowed too many permits in there without**  
3 **accounting for that, it would impact streamflow.**  
4 Q. So it could impact streamflow, correct?  
5 **A. What could impact streamflow?**  
6 Q. If -- if you permitted a well without taking  
7 into account what it normally loses to the  
8 stream, that could impact streamflow, couldn't  
9 it?  
10 **A. Yeah, your sentences are really messing me up**  
11 **because you say the well taking from the water,**  
12 **you're talking about the aquifer losing water to**  
13 **the stream?**  
14 Q. Yes.  
15 **A. Yes.**  
16 Q. And even though -- even though, maybe arguably,  
17 the river nodes produce some collateral  
18 protection of streamflow, that wasn't their  
19 purpose, was it, Mr. Boese?  
20 **A. It was such a long time ago and I wasn't the one**  
21 **that developed the regulations for that, I don't**  
22 **know if that was a purpose, the purpose, not a**  
23 **purpose. It was definitely to account for water**  
24 **that is lost from the aquifer into the river**  
25 **that protects the safe yield of the area which**

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1 **impacts streamflow.**  
 2 Q. So would you agree with me that there is -- that  
 3 there is not a mathematical tie between how base  
 4 nodes are used in a calculation and minimum  
 5 desirable streamflow?  
 6 **A. There's certainly a component of that because**  
 7 **you're accounting for that water that leaves the**  
 8 **aquifer, into the stream, with -- it's part of**  
 9 **minimum desirable streamflow. The water that's**  
 10 **being discharged from the aquifer into the river**  
 11 **is part of minimum desirable streamflow. If**  
 12 **there was no water being discharged from the**  
 13 **aquifer into the river during a dry period, the**  
 14 **river wouldn't flow at all.**  
 15 Q. So, Mr. Boese, let's back up and will you just  
 16 describe for us how river base nodes work?  
 17 **A. I'm sorry, was that a question?**  
 18 Q. Yes.  
 19 **A. I thought it was a statement.**  
 20 Q. No, it was would you, listen carefully for the  
 21 words, would you please describe for us --  
 22 **A. Can we have a break?**  
 23 Q. -- how river base nodes work.  
 24 **A. Could I ask for a break?**  
 25 **PRESIDING OFFICER:** Do you need

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1 another restroom break?  
 2 **A. I do.**  
 3 **PRESIDING OFFICER:** Oh. Let's take  
 4 a quick break, thank you.  
 5 (Thereupon, a recess was taken;  
 6 whereupon, the following was had.)  
 7 **PRESIDING OFFICER:** Okay. We are  
 8 now back on the record.  
 9 **A. Could you repeat the question before we went to**  
 10 **break, Mr. McLeod?**  
 11 **BY MR. MCLEOD:**  
 12 Q. Yes, would you please explain for us how river  
 13 base nodes work.  
 14 **A. As related to our safe yield regulation?**  
 15 Q. Yes.  
 16 **A. Okay.**  
 17 Q. That's the only thing they do, isn't it?  
 18 **A. I don't know, maybe there's base flow nodes**  
 19 **somewhere else. I think we should first turn to**  
 20 **the definitions in the GMD2 regulations under**  
 21 **Exhibit 24, in particular K.A.R. 5-22-1. So**  
 22 **under 5-22-1(i), the definition of base flow**  
 23 **means groundwater that seeps, flows, or is**  
 24 **otherwise naturally discharged from an aquifer**  
 25 **into a stream. (J) is base flow allocation**

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1 **means the annual quantity of water assigned to a**  
 2 **base flow node expressed in acre-feet per**  
 3 **calendar year. The natural discharge to the**  
 4 **stream shall be assumed to be the equivalent to**  
 5 **the rate of flow in the stream that is equaled**  
 6 **or exceeded 90 percent of the time. (K), you**  
 7 **want me to wait for you to catch up, Mr. McLeod?**  
 8 Q. What page are you on, Mr. Boese?  
 9 **A. I'm on the first page of Exhibit 24 under**  
 10 **definitions for the GMD.**  
 11 Q. Okay.  
 12 **A. You want me to start over?**  
 13 Q. I think I got base flow.  
 14 **A. Okay, I was on base flow allocation. I'll start**  
 15 **over on that.**  
 16 Q. Okay.  
 17 **A. Means the annual quantity of water assigned to a**  
 18 **base flow node expressed in acre-feet per**  
 19 **calendar year. The natural discharge to the**  
 20 **stream shall be assumed to be the equivalent to**  
 21 **the rate of flow in the stream that is equaled**  
 22 **or exceeded 90 percent of the time. (K), base**  
 23 **flow node means an artificial point located in**  
 24 **the channel of a watercourse for the purpose of**  
 25 **allocating a proportional amount of the base**

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1 **flow. I think those are the three main**  
 2 **definitions that we need to look at, with the**  
 3 **focus probably on base flow allocation, which is**  
 4 **equaled or exceeded 90 percent of the time, the**  
 5 **rate of flow of the stream.**  
 6 Q. Okay. So let's -- let's look back first to the  
 7 definition of base flow, which here means  
 8 groundwater that seeps, flows, or is otherwise  
 9 naturally discharged from an aquifer into a  
 10 stream. And when you look at that definition,  
 11 Mr. Boese, do you still think that base flow  
 12 would be the same as minimum desirable  
 13 streamflow?  
 14 **A. I think it could be because of the next line of**  
 15 **base flow allocation, it says, the natural**  
 16 **discharge to a stream shall be assumed to be the**  
 17 **equivalent of flow in a stream that is equaled**  
 18 **or exceeded 90 percent of the time. Now, I**  
 19 **can't comment on how DWR determines base flow,**  
 20 **but I believe those sort of calculations are**  
 21 **determined to determine minimum desirable**  
 22 **streamflow.**  
 23 **And I could be wrong, that's not something**  
 24 **I've determined, but I thought DWR used**  
 25 **80 percent exceedance, but I've also seen some**

1 **90 percent exceedance rates to determine minimum**  
2 **desirable streamflow. It's probably something**  
3 **DWR should testify to, but I believe that is**  
4 **the -- that is how they calculate base flow.**  
5 **Again, if I'm wrong, then that is something they**  
6 **should testify to. 'Cause that is not something**  
7 **that -- that I do necessarily, determine minimum**  
8 **desirable streamflow.**

9 **But I believe that in my past work on the**  
10 **Bentley reserve field, I think that was how DWR,**  
11 **and obviously if you -- if DWR wants to call a**  
12 **witness and explain how they determine MDS, how**  
13 **they set those values, I believe they were --**  
14 **they were based on exceedance of a streamflow at**  
15 **either 80 or 90 percent of the time, and that's**  
16 **how -- what the base flow allocation is based on**  
17 **is 90 percent exceedance flow.**

18 Q. And let's go on now to base flow node.

19 A. Okay.

20 Q. And what do you do with this artificial point  
21 located in the channel of the watercourse for  
22 the purpose of allocating a proportional amount  
23 of the base flow?

24 A. What do we do with it?

25 Q. What do you do with it?

1 Q. So out of the -- out of the total safe yield  
2 that's in the area that you're looking at, some  
3 of that number is eaten up or given to the base  
4 flow node in the calculation, correct?  
5 A. That is correct, if it -- if that  
6 two-mile-radius circle includes any stretch of a  
7 stream that is subject to base flow allocation.  
8 And we can actually look at one of those, if you  
9 want to, on Exhibit 59. It had some river  
10 stretch of the Little Arkansas in some of those  
11 safe yield calculations, if we want to see  
12 visually what that looks like. And I think that  
13 may be -- that may be good for --

14 Q. Let's do that.

15 A. Okay. That would be Exhibit 59 --  
16 **PRESIDING OFFICER: 59.**

17 A. -- would be the easiest one to look at, I think.

18 **BY MR. MCLEOD:**

19 Q. What volume is that, Mr. Boese?

20 A. I'm sorry, Volume IV. If you want to look at  
21 the very first one, and we were lucky, the very  
22 first one has some base flow nodes in it. And  
23 if we're looking at that two-mile circle, that  
24 would be that -- that red bigger circle that  
25 encompasses almost the entire area of

1 A. That's used in the safe yield calculation.

2 Q. And how is it used in a safe yield calculation?

3 A. You want to turn to the safe yield calculation  
4 and discuss, because this is going to take  
5 awhile, I'm just warning you. So let's go to  
6 K.A.R. 5-22-7(a), and under (a), it is  
7 everything that is included in the calculation  
8 for safe yield.

9 **PRESIDING OFFICER: I'm sorry, where**  
10 **are you?**

11 A. I'm on K.A.R. 5-22-7(a). So listed under  
12 5-22-7(a)(1), (A) through (F) is what is  
13 included in the safe yield calculation of what  
14 we would call existing appropriations, if you  
15 look at that spreadsheet. So you have to  
16 include under the sum of all prior  
17 appropriations the proposed application  
18 quantity, vested rights, appropriation rights,  
19 term permits, earlier priority applications, and  
20 the base flow nodes, and that was the one I  
21 wanted to key in on, so base flow nodes are  
22 included in that two-mile-radius circle as a  
23 base flow node, or nodes, depending on how many  
24 intersect in the streamflow.

25 **BY MR. MCLEOD:**

1 consideration of the map. You see where I'm at,  
2 Mr. McLeod?

3 Q. Yes.

4 A. Okay. So in the northeastern portion of that  
5 circle, or I'll say to the right and to the  
6 upper portion of that circle, do you see the  
7 Little Arkansas River flowing into the circle  
8 and then out of the circle? And if you want me  
9 to, I'd be glad to come point it out or --

10 Q. I think I do.

11 A. Okay. You see the red triangles that are  
12 located essentially in the stream --

13 Q. Yes.

14 A. -- and they're located about a quarter of a mile  
15 apart from each other?

16 Q. About six or seven of them, maybe eight?

17 A. Looks like seven.

18 Q. Yes.

19 A. So those are in the area of consideration, and  
20 the way you can tell if it's in the area of  
21 consideration is that red triangle has a circle  
22 drawn around it. So if you look outside the  
23 circle, there is -- outside the bigger circle,  
24 the red triangles don't have circles around  
25 them. So that's just really the -- the



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1 software, the program picking up what's inside  
 2 the two-mile-radius circle.  
 3 So there are eight -- I'm sorry, there are  
 4 seven base flow nodes in that area of  
 5 consideration, in that two-mile circle. If you  
 6 go over to the spreadsheet and they are listed  
 7 as VC026, 27, 29, 30, 31, 32, 28. That is the  
 8 seven base flow nodes that are located in the  
 9 area of consideration.  
 10 Q. And you also impute to each one of them a well  
 11 ID, correct, even though they're not actual  
 12 wells?  
 13 A. That's correct, that's in our -- that's in our  
 14 database, it doesn't mean it's a well. If it's  
 15 a groundwater pit, if it's a well, if it's a  
 16 base flow node, they are in a access database  
 17 table with -- in the column of well ID. That's  
 18 just -- that's just a -- that's just a number in  
 19 the database, it means absolutely nothing to  
 20 this respect.  
 21 Q. And then in the far right-hand column, is each  
 22 one of those base flow nodes being allocated  
 23 104 acre-feet?  
 24 A. That's correct. Did that help sort of visualize  
 25 how we do that?

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1 Q. And is the reason that you do that, Mr. Boese,  
 2 so that -- so that -- let me back up. Is that  
 3 104 acre-feet an approximation of what each one  
 4 of those segments in the aquifer is thought to  
 5 be -- excuse me, segments in the river is  
 6 thought to be receiving from the aquifer?  
 7 A. Yes, it's a little more -- a little more  
 8 complicated. It shows up as sort of a pumping  
 9 well, although there's obviously not a well  
 10 there in the stretch of the river, but if we  
 11 want to go back to the safe yield, it  
 12 essentially said they're based on a quarter mile  
 13 apart from each other, the entire base flow  
 14 allocation was determined for the stretch, and  
 15 then you had to do a computation to convert cfs  
 16 into acre-feet per year by using a factor of 724  
 17 to get the acre-feet per year. And then there  
 18 was a quarter mile arc drawn one after another,  
 19 and each one of those got that allocation of how  
 20 many -- divided that total by how many base flow  
 21 nodes were in that entire river stretch.  
 22 Q. And if you didn't take those base flow nodes  
 23 into account and you just evaluated safe yield  
 24 based on other wells in the area, there would be  
 25 728 acre-feet going out to the river that would

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1 not be accounted for in the calculation,  
 2 correct?  
 3 A. If -- if they weren't in -- if they weren't in  
 4 the calculation?  
 5 Q. Right.  
 6 A. That's correct.  
 7 Q. And so the real point of the base flow nodes is  
 8 that you're protecting the aquifer from  
 9 accidentally being over-appropriated by missing  
 10 that 728 acre-feet in this example in your  
 11 calculation, correct?  
 12 A. Yes, and it has the secondary of protecting that  
 13 streamflow because you accounted for it. Now,  
 14 in this one it didn't matter, it's too far  
 15 over-appropriated to begin with, but I can  
 16 guarantee you I have run lots of safe yield for  
 17 folks, and because those river nodes are in the  
 18 safe yield, it kicked them over. So this one  
 19 was an extreme example because it was already,  
 20 what, 5,000 acre-feet, 7 -- 5 or 6,000 acre-feet  
 21 already over-appropriated.  
 22 Q. So -- and let's go through two examples. So you  
 23 account for it and if the result is that you  
 24 approve the well, then the river there is still  
 25 receiving at each of those nodes that 104

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1 acre-feet, correct?  
 2 A. Well, it doesn't exactly receive 104 acre-feet  
 3 physically at that -- there's not -- there's not  
 4 a geyser at the -- in the river every quarter of  
 5 a mile, if that's what you meant. It's the  
 6 entire stretch is receiving some flow.  
 7 Q. So if you approve the well, I mean, the well is  
 8 drawing down the aquifer to some extent, does  
 9 that have an impact on the streamflow in the  
 10 adjacent river?  
 11 A. Not if it met the safe yield, that's why we do  
 12 that calculation, that's why we account for it  
 13 so it doesn't impact the streamflow.  
 14 Q. And if you don't approve the well, then that  
 15 protects everything, right, the river and safe  
 16 yield in the aquifer?  
 17 A. If it meets safe yield, why wouldn't I approve  
 18 it? You lost me a little bit.  
 19 Q. I'm saying if you don't approve the well?  
 20 A. Oh, if it's already over-appropriated?  
 21 Q. If it's already over-appropriated and you don't  
 22 approve the well, then the well obviously has no  
 23 impact, right?  
 24 A. Well, yeah, obviously, it would -- it would  
 25 protect the aquifer and the streamflow to that

1 extent.

2 Q. But, Mr. Boese, in terms of minimum desirable  
3 streamflow, isn't -- isn't that just numbers  
4 that DWR has identified for points on the river  
5 need to be met for minimum desirable streamflow  
6 to exist?

7 **A. I believe so, I believe it's that very similar**  
8 **calculation under the base flow allocation of**  
9 **90 percent exceedance. I don't know if DWR**  
10 **uses -- I remember during the Bentley reserve,**  
11 **there was a discussion that was it 80 percent or**  
12 **90 percent exceedance for minimum desirable**  
13 **streamflow. I don't know which one DWR uses,**  
14 **that would be a question for DWR. But it ends**  
15 **up representing the minimum desirable streamflow**  
16 **'cause we use 90 percent exceedance.**

17 Q. So although these -- although these allocations  
18 to the base node do have some effect in  
19 accounting for and protecting streamflow  
20 generally, do they have any mathematical tie to  
21 the number that's been determined by DWR as  
22 minimum desirable streamflow?

23 **A. Well, if they were calculated the same way, I**  
24 **guess there would be a mathematical connection**  
25 **between the two, is that your question?**

1 Q. I mean, minimum desirable streamflow can be  
2 impacted by weather conditions, can't it?

3 **A. Yes, if it rains, then that makes the flow in**  
4 **the river go up.**

5 Q. And I don't think I'm making enough progress to  
6 justify continuing the line of questioning.

7 Mr. Boese, a couple of times during  
8 Ms. Wendling's questioning -- I want to ask  
9 about one other thing first. It was actually  
10 your counsel's phraseology and not yours, but in  
11 some of the back and forth, Mr. Stucky referred  
12 to impairment of the aquifer. Is there such a  
13 thing as impairment to the aquifer?

14 **A. A legal definition of that?**

15 Q. Yes.

16 **A. Not that I'm aware of. I don't think there's a**  
17 **legal definition of impairment in the DWR rules**  
18 **and regulations or statutes.**

19 Q. The aquifer as such doesn't hold any water  
20 rights, does it?

21 **A. No.**

22 Q. And the aquifer as such can't submit an  
23 impairment complaint, can it?

24 **A. No, I think -- I think you should ask Mr. Stucky**  
25 **what he meant by impairment; I assume he meant**

1 impact.

2 Q. I think --

3 **A. But that's a question for him, not for me.**

4 Q. I think he was attempting to differentiate two  
5 kinds of impairment analysis, and maybe we can  
6 clear it up with an additional question. There  
7 is a kind of impairment that relates to a  
8 general decrease in the water table, correct?

9 **A. It's called an overall lowering of the water**  
10 **table, it's in 5-4-1(a) when the -- when the**  
11 **impairment regs were bifurcated.**

12 Q. Yes. And that still is an impairment to a user,  
13 right? A user brings the complaint and the user  
14 says I'm impaired, and then there's a  
15 determination whether that's due to the general  
16 reduction of the water table, correct?

17 **A. When an -- when someone submits an impairment**  
18 **complaint to the Division of Water Resources,**  
19 **and, again, you should ask DWR, but the way the**  
20 **rules and regs are bifurcated, DWR does an**  
21 **investigation, they can ask for GMD assistance.**  
22 **If it's determined that it's an overall lowering**  
23 **of the water table, that impairment complaint is**  
24 **then submitted to the GMD, if there's a GMD in**  
25 **the area, for a remedy. And I think the GMD has**

1 Q. I mean, minimum desirable streamflow can be  
2 impacted by weather conditions, can't it?

3 **A. Yes, if it rains, then that makes the flow in**  
4 **the river go up.**

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6 justify continuing the line of questioning.

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11 some of the back and forth, Mr. Stucky referred  
12 to impairment of the aquifer. Is there such a  
13 thing as impairment to the aquifer?

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17 **legal definition of impairment in the DWR rules**  
18 **and regulations or statutes.**

19 Q. The aquifer as such doesn't hold any water  
20 rights, does it?

21 **A. No.**

22 Q. And the aquifer as such can't submit an  
23 impairment complaint, can it?

24 **A. No, I think -- I think you should ask Mr. Stucky**  
25 **what he meant by impairment; I assume he meant**

1 **six months, I'm going to need to pull the regs,**  
2 **six months to provide a plan to remedy the**  
3 **situation. If it's direct well to well, then**  
4 **that is a DWR determination, but, again, the GMD**  
5 **can assist in that. Does that characterize what**  
6 **you ask?**

7 Q. So there may be a lowering of the water table,  
8 but the impairment or -- I mean, the impairment  
9 issue is with respect to a rights holder or  
10 rights holders within the aquifer, correct?

11 **A. Yes. Yeah, I don't think the aquifer can file**  
12 **an impairment complaint, if that's what your**  
13 **question was.**

14 Q. Thank you.

15 **A. And, again, I think it's notable that there's**  
16 **not a definition of impairment in the DWR**  
17 **statutes and regulations, although the Court in**  
18 **Garetson versus American Warrior, Inc. went to**  
19 **the -- went to the legal definition of**  
20 **impairment, and we can discuss that if you'd**  
21 **like.**

22 Q. Mr. Boese, during Ms. Wendling's question --  
23 questions, she asked you about using quarterly  
24 measurements as opposed to annual measurements  
25 for different purposes. And currently it is the

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1 case that the -- I mean, you've indicated this,  
 2 I think, with some -- some map symbols are drawn  
 3 larger in hydrographs because they're the annual  
 4 and hence official January numbers that  
 5 determine, for example, the low index levels  
 6 currently?  
 7 **A. They used to not -- they used to not be**  
 8 **specified in the permit conditions as far as**  
 9 **what measurement was used. When the 1993**  
 10 **levels, the technical correction was made to the**  
 11 **1993 levels, there was also a clarification that**  
 12 **the static water level is measured in January to**  
 13 **determine if the City can withdraw recharge**  
 14 **credits.**  
 15 Q. And so if we do that annually and -- and for  
 16 that reason, doesn't it make sense that the  
 17 operational plan in the City's proposal would  
 18 also evaluate recharge capacity annually rather  
 19 than quarterly?  
 20 **A. No. 'Cause conditions change throughout the**  
 21 **year. So, therefore, physical recharge capacity**  
 22 **would change throughout the year.**  
 23 Q. For that same reason, do you think that it would  
 24 make sense to evaluate the index levels  
 25 quarterly?

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1 **A. No.**  
 2 Q. And why?  
 3 **A. Because the January measurements are static, it**  
 4 **reduces -- eliminates the effects of pumping, so**  
 5 **you really want a static water level, I think**  
 6 **the City would really water a static water level**  
 7 **measured in January because that's as probably**  
 8 **as high as it's going to be. It would -- it**  
 9 **would be in the best interest of everybody, I**  
 10 **think, to use the static because that's when the**  
 11 **aquifer is under the least amount of stress to**  
 12 **determine what that static water level is.**  
 13 **Recharge capacity for whether the City should**  
 14 **inject or not has nothing to do with that.**  
 15 **That's a day to day, if the water level drops**  
 16 **10 feet because everybody pumped hard in the**  
 17 **summertime, there might be room in the aquifer,**  
 18 **why wouldn't the City be able to inject?**  
 19 Q. So you think there's more potential for a  
 20 meaningful quarterly fluctuation in recharge  
 21 capacity than there -- than there would be in  
 22 evaluating the index levels on that basis?  
 23 **A. Can you rephrase that?**  
 24 Q. Do you think that temporary changes could have  
 25 greater significance for purposes of evaluating

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1 recharge capacity than they do for evaluating  
 2 whether we're above or below the 1993 index  
 3 levels?  
 4 **A. They're -- they're two different things, I'm not**  
 5 **sure I want to compare them.**  
 6 Q. Okay. We'll leave it at that. A couple of  
 7 times during your comments in response to  
 8 Ms. Wendling's questions, you noted that there  
 9 were issues in the north part of the District in  
 10 the modeling where you felt that refinement was  
 11 needed. And, Mr. Boese, I'm just going to ask  
 12 the question this way, did Mr. Romero adjust his  
 13 modeling for those issues that you thought  
 14 needed refinement?  
 15 **A. Not that I am aware of, but I didn't look in**  
 16 **detail to Mr. Romero's modeling.**  
 17 Q. Didn't matter to you whether he had refined  
 18 those issues that you thought were important?  
 19 **A. His results matter to me, I don't know if he did**  
 20 **or didn't do it.**  
 21 Q. Given his results, you didn't see any need to  
 22 inquire into the bases of his modeling?  
 23 **A. I don't recall if Mr. Romero and I had any**  
 24 **conversations about the water level heads to the**  
 25 **north. I believe I had those conversations with**

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1 **Mr. Akhbari. Mr. Romero, I cannot recall if I**  
 2 **had those discussions about -- I think he was**  
 3 **aware of the discrepancy between actual water**  
 4 **level heads and modeled water level heads. I**  
 5 **think we can go back and look at those**  
 6 **hydrographs and it's way off.**  
 7 Q. And Dr. Akhbari, I mean, he didn't produce any  
 8 modeling showing individual well impacts, did  
 9 he?  
 10 **A. No.**  
 11 Q. You're relying on Mr. Romero's modeling for all  
 12 of that, aren't you?  
 13 **A. Yes.**  
 14 **MR. MCLEOD:** I don't have any  
 15 further questions for the witness.  
 16 **PRESIDING OFFICER:** Mr. Oleen?  
 17 **MR. OLEEN:** None from DWR.  
 18 **PRESIDING OFFICER:** Ms. Wendling?  
 19 **MS. WENDLING:** None here.  
 20 **PRESIDING OFFICER:** Mr. Stucky?  
 21 **MR. STUCKY:** That raised just a few  
 22 additional questions. I had passed on the  
 23 questioning before for the record, but I do  
 24 have just a couple additional questions,  
 25 lines of questioning.

1 **REDIRECT EXAMINATION**

2 **BY MR. STUCKY:**

3 Q. Mr. Boese, since you are -- you mentioned that  
4 there was no definition of impairment in the  
5 Kansas Water Appropriation Act, is that what you  
6 stated?

7 **A. There's no explicit definition listed in --**  
8 **listed under definitions in the Water**  
9 **Appropriation Act or the rules and regulations**  
10 **thereof.**

11 Q. But I believe you mentioned that K.S.A.  
12 82a-711(c) is discussed regarding impairment in  
13 the Garetson versus American Warrior,  
14 Incorporated case; is that right?

15 **A. Well, 711(c) gives -- gives some sort of, I**  
16 **think, insight, and we should probably turn to**  
17 **that. When I referred to the Garetson versus**  
18 **American Warrior, Inc. case in -- I guess just**  
19 **for relevance, that's not in GMD2, that's in**  
20 **southwest Kansas, the Court lended a definition**  
21 **based on the legal definition of impairment of**  
22 **what they ruled on. So 711(c), and we can talk**  
23 **about it if you want to turn to it.**

24 Q. Yeah. In that case --

25 **A. That case and 711(c) aren't necessarily related**

1 **to each other but --**

2 Q. Well, tell me about 711(c), I don't mean to cut  
3 you off.

4 **A. Okay. And I think it's 711(c), let me**  
5 **double-check. Yes, so 711(c), and I can wait**  
6 **for you to catch up, everybody.**

7 **PRESIDING OFFICER:** Yes.

8 **A. Okay. 82a-711(c), it says, with regard to**  
9 **whether a proposed use will impair a use under**  
10 **an existing water right, impairment shall**  
11 **include the unreasonable raising or lowering of**  
12 **the static water level or the unreasonable**  
13 **increase or decrease of the streamflow or the**  
14 **unreasonable deterioration of the water quality**  
15 **at the water user's point of diversion beyond a**  
16 **reasonable economic limit. So it says with**  
17 **regard whether a proposed use will impair,**  
18 **impairment shall include, I mean, you could make**  
19 **some -- some reasonable conclusions it's lending**  
20 **some definitions to impairment or at least what**  
21 **impairment is. Or -- or can include.**

22 **BY MR. STUCKY:**

23 Q. Okay. Well, let's go back to that case, and  
24 incredibly, I was actually watching American  
25 Ninja Warrior with my son last night,

1 incredibly, but that's not quite the name of  
2 this case. What was the name of that case  
3 again?

4 **A. Garetson v. American Warrior, Inc. and I think**  
5 **it changed some names through time because there**  
6 **was some -- well, it's too complicated. It**  
7 **ended up being Garetson versus American Warrior,**  
8 **Inc., I think, when it got to appellate court.**

9 Q. Tell me what that case stated with regard to  
10 impairment or a definition of impairment.

11 **A. It uses words like diminish, injure.**

12 Q. Weakens?

13 **A. Weakened, yeah. I mean, you may have it pulled**  
14 **up, I'm trying to remember the exact -- exact**  
15 **phraseology, but it was -- it talked about**  
16 **diminishing, injuring, weakens the --**

17 Q. Does it say something to the effect that  
18 impairment means when a diversion diminishes,  
19 weakens, or injures the diversion of water under  
20 a prior right?

21 **A. That -- that sounds like what was in -- in the**  
22 **Court decision.**

23 Q. Do you have to fully penetrate the aquifer to be  
24 impaired, especially with respect to domestic  
25 wells? And you're free to reference K.A.R.

1 5-4-1 to answer that question.

1 5-4-1 to answer that question.

2 Q. Well, tell me about 711(c), I don't mean to cut  
3 you off.

4 **A. Okay. And I think it's 711(c), let me**  
5 **double-check. Yes, so 711(c), and I can wait**  
6 **for you to catch up, everybody.**

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12 **the static water level or the unreasonable**  
13 **increase or decrease of the streamflow or the**  
14 **unreasonable deterioration of the water quality**  
15 **at the water user's point of diversion beyond a**  
16 **reasonable economic limit. So it says with**  
17 **regard whether a proposed use will impair,**  
18 **impairment shall include, I mean, you could make**  
19 **some -- some reasonable conclusions it's lending**  
20 **some definitions to impairment or at least what**  
21 **impairment is. Or -- or can include.**

22 **BY MR. STUCKY:**

23 Q. Okay. Well, let's go back to that case, and  
24 incredibly, I was actually watching American  
25 Ninja Warrior with my son last night,

2 **A. I don't -- I don't believe so. I mean, I think**  
3 **there's -- in K.A.R. 5-4-1, and maybe I should**  
4 **turn to it, but I'm just going to speak from**  
5 **memory until -- until I need to, it says when**

6 **someone files an impairment complaint, they have**  
7 **to submit a report to the chief engineer for**  
8 **a -- if it's a non-domestic well that the owner**  
9 **is claiming is impaired, has to submit a report**  
10 **describing whether or not they fully penetrated**  
11 **the usable portion of the aquifer. Domestic**  
12 **well owners do not have to do that, although the**  
13 **chief engineer can require it. But by**  
14 **extension, that doesn't mean that they have to**  
15 **fully penetrate the aquifer to be able to**  
16 **complain -- claim impairment.**

17 Q. Just to clarify the record, there was a question  
18 with respect to what form of impairment I may  
19 have been referring to. Mr. Boese, would you  
20 agree with me that there is a bifurcation of the  
21 impairment regulations?

22 **A. There is, that was done a few years back.**

23 Q. And explain what is meant by bifurcation of the  
24 impairment regulations.

25 **A. So I'm going to turn to it probably here in a**

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1 minute before I -- before I misspeak, but the  
 2 impairment regulation, and we're calling it  
 3 that, it actually has a longer title than that,  
 4 was bifurcated, and, of course, the GMDs were  
 5 involved in that language development; we had a  
 6 lot of discussion with DWR and the chief  
 7 engineer, and it was very -- very productive on  
 8 what that language should look like. But it  
 9 bifurcated into direct well-to-well impairment  
 10 and impairment caused by regionally -- regional  
 11 lowering of the water table. And, again, that's  
 12 K.A.R. 5-4-1 and then (1)(a).  
 13 Q. And (1)(a) is a regional drawdown of sorts; is  
 14 that right?  
 15 A. Yes, I'm turning to it, but that is correct.  
 16 That's the -- the regional lowering of the water  
 17 table.  
 18 Q. And to clarify the record again, that's the one  
 19 where a groundwater management district would  
 20 recommend an action to remedy the impairment; is  
 21 that right?  
 22 A. Yes, it's identified under (b)(1), and we can  
 23 read it if you would -- if you would like me to.  
 24 Q. I think the record is clear in that regard, you  
 25 don't need to read that particular regulation,

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1 Mr. Boese.  
 2 I'm going to move on to one other final  
 3 line of questioning that I'm going to circle  
 4 back to now. Mr. McLeod asked you just a moment  
 5 ago about measurements of -- in January. Do you  
 6 recall that line of questions?  
 7 A. I do.  
 8 Q. Okay. And earlier there was a discussion about  
 9 how that regulation was changed and there was a  
 10 measurement that occurred during a different  
 11 time period; is that right?  
 12 A. Well, yeah, the permit conditions were changed  
 13 to clarify because it was not clear in the  
 14 original ASR permit approvals for both, I think,  
 15 Phase I and Phase II, it was not clear when that  
 16 water level should -- measurement should be  
 17 taken at the index well. And that condition was  
 18 then clarified to state the January static water  
 19 level.  
 20 Q. And, in fact, through the City's proposal --  
 21 well, let's talk about the proposal document.  
 22 Mr. Boese, turn to page 3-7, actually starting  
 23 on 3-6 of the City's proposal document, if you  
 24 will.  
 25 A. Okay.

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1 Q. Tell me what 3-6 and 3-7 tell us about when the  
 2 water levels would be considered for purposes of  
 3 accumulating aquifer maintenance credits.  
 4 A. January of each year.  
 5 Q. And tell me the basis for that conclusion.  
 6 A. It's stated actually in -- on page 3-7, looks  
 7 like the -- about the second para -- or second  
 8 sentence from the bottom, it says, during  
 9 January of each year, the City will measure the  
 10 doc -- and document the static groundwater  
 11 levels at each existing ASR index wells and at  
 12 each of the City's ASR recharge wells. Do you  
 13 want me to continue?  
 14 Q. If -- if you need to for your explanation.  
 15 A. Well, those water level measurements would then  
 16 be used to generate the annual operation table  
 17 that would calculate the available recharge  
 18 capacity for each -- each of the ASR recharge  
 19 wells to determine if it's an AMC or a  
 20 physical -- if they have to physically inject  
 21 with an AMC or a combination thereof.  
 22 Q. So in other words, as the City is allowed to  
 23 determine whether or not they can accumulate  
 24 these aquifer maintenance credits, those water  
 25 levels are measured in January, and if the water

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1 levels are high enough in January, the City then  
 2 can accumulate aquifer maintenance credits  
 3 throughout the year. Is that a true statement?  
 4 A. That's what the proposal is putting forth --  
 5 Q. Okay.  
 6 A. -- of the operational plan, yes.  
 7 Q. Now, Mr. Boese, yesterday I believe it was, or  
 8 as Ms. Wendling noted in her cross-examination,  
 9 the days have gone by and become a blur, one day  
 10 in the last few days, Mr. McLeod asked you about  
 11 two different scenarios, a scenario where  
 12 aquifer maintenance credits are being utilized  
 13 and a scenario where there's physical injection  
 14 into the aquifer but the aquifer is pumped down  
 15 first. I could ask -- I could restate those two  
 16 scenarios in greater detail, or I could ask the  
 17 court reporter to read them back, but do you  
 18 recall the two scenarios I'm referring to?  
 19 A. I believe so.  
 20 Q. So in one -- well, let me back up as far as the  
 21 basis of those scenarios. In one of the  
 22 scenarios, it was assumed that the City would  
 23 pump the aquifer down first. Is that what was  
 24 stated in the scenario?  
 25 A. I think -- I think that's correct.

1 Q. And in the other scenario with respect to  
2 aquifer maintenance credits, it was assumed that  
3 the aquifer would -- would be kept full, is  
4 that -- is that right --  
5 **A. Yes, I think --**  
6 Q. -- the other scenario?  
7 **A. -- I think so. Yes, that sounds correct.**  
8 Q. And you also recall the testimony and discussion  
9 in this case about the benefits of the aquifer  
10 maintenance proposal made in the context of the  
11 predicated notion that the aquifer will be kept  
12 full. Do you recall all that discussion?  
13 **A. Yes.**  
14 Q. Does it appear to you that all of the purported  
15 benefits of the City's AMC proposal are  
16 predicated on the assumption that the City will  
17 not first pump down the aquifer?  
18 **A. Yes.**  
19 Q. But, in fact, isn't it a flawed assumption in  
20 the sense that it is assumed the City will not  
21 pump down the aquifer first with respect to AMCs  
22 or be forced to do so to accumulate physical  
23 recharge credits?  
24 **A. It certainly could be because the City could, in**  
25 **fact, based on that January water level**

1 **measurement, they could be able to claim AMCs**  
2 **all year long while at the same time**  
3 **simultaneously pumping the aquifer as hard as**  
4 **they wanted to.**  
5 Q. Now let's turn back to what you told me a minute  
6 ago, keep those hypotheticals in mind,  
7 Mr. Boese.  
8 **A. Okay.**  
9 Q. Let's turn back now to what you told me before  
10 about a January water level measurement, okay?  
11 **A. Uh-huh.**  
12 Q. And Ms. Wendling triggered this thought in my  
13 mind as she was asking questions, she asked  
14 about, what about quarterly measurements, but  
15 the answer is we're looking at a January  
16 measurement and a January measurement only with  
17 respect to determining whether AMCs can be  
18 accumulated. So let's apply that to the  
19 scenarios identified by Mr. McLeod. Assume for  
20 a moment we live in a world where both AMC  
21 credits are allowed and ASR Phase II physical  
22 recharge credits are allowed. Are you with me?  
23 **A. Okay.**  
24 Q. Since it is proposed that recharge capacity for  
25 an entire year will be based on the January

1 water level measurements, couldn't the City pump  
2 the aquifer down to create storage the entire  
3 year and get a two for one on water and credits  
4 through the AMC proposal?  
5 **A. Yeah, yes, absolutely.**  
6 Q. Then the next year gain recharge credits from  
7 physical injection and then repeat this year's  
8 scenario over and over?  
9 **A. That could -- that could occur depending on the**  
10 **water levels, if the City was getting AMC credit**  
11 **for the entire year, pumping the aquifer down,**  
12 **it made enough storage room, then the next**  
13 **January measurement said they had to be**  
14 **physical, then they could do physical and then**  
15 **repeat this every couple of years. It may take**  
16 **longer -- it may not quite work out as a**  
17 **two-year scenario because it may take a couple**  
18 **years of pumping hard to get -- get below that**  
19 **AMC trigger level, but, yeah, I mean, that's**  
20 **a -- that's a proposal, it could happen.**  
21 Q. In other words, if we're only predicting whether  
22 or not the City can get AMC credits based on the  
23 January water levels, the City may even have an  
24 incentive to pump the aquifer down if AMCs are  
25 allowed; is that true? Is that a possibility?

1 **A. Well, yeah, 'cause they could be -- I mean, I**  
2 **should say yes, they could because they could be**  
3 **taking Little Arkansas River water to town,**  
4 **getting a beneficial use, getting a credit at**  
5 **the same time in the aquifer, and at that same**  
6 **time pumping the aquifer hard with their native**  
7 **water rights for that entire year.**  
8 Q. Okay.  
9 **A. I mean, there -- yeah.**  
10 Q. Now, Mr. Boese, I understand that the City might  
11 want to keep the aquifer full with respect to  
12 the AMC proposal because the City would get a  
13 two for one on water and credits through the AMC  
14 proposal, but setting that double benefit to the  
15 City aside, to answer my question the best you  
16 can, there's a possibility that even with  
17 respect to the AMC proposal they would still  
18 pump the aquifer down because we're only looking  
19 at the January levels; is that true?  
20 **A. They certainly could during that entire year or**  
21 **years until they hit that -- that index level,**  
22 **then it would require physical recharge credit,**  
23 **it could take more than a year, it could be a**  
24 **couple years that could happen, I suppose,**  
25 **depending on how full the aquifer was to begin**

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1 **with. So, yes, to your answer -- or to your**  
 2 **question.**  
 3 Q. One final question related to that point, water  
 4 levels tend to recover in January, is that true  
 5 from your experience having been a manager of  
 6 the Equus Beds Aquifer?  
 7 **A. Generally, you're seeing recovery from the time**  
 8 **the summer ends until pumping starts again, so**  
 9 **January is -- is the best time to take the**  
 10 **static water level measurements 'cause they**  
 11 **generally recovered fully and the static water**  
 12 **level is -- is static, it's not moving around.**  
 13 Q. In other words, in the summer, the static water  
 14 levels would be lower, is that generally a true  
 15 statement? In the summer months when there's  
 16 heavy pumping?  
 17 **A. Yeah, if there's heavy pumping, I mean, we've**  
 18 **had some scenarios where -- but, yes, generally**  
 19 **the aquifer drops during the summertime where**  
 20 **there is pumping occurring.**  
 21 Q. So that's why choosing a January date to measure  
 22 water levels to predict whether the City can  
 23 accumulate AMC credits is beneficial for the  
 24 City; is that right?  
 25 **A. For being able to collect -- accumulate AMCs,**

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1 **absolutely, yes.**  
 2 **MR. STUCKY:** No further questions.  
 3 **PRESIDING OFFICER:** Mr. McLeod.  
 4 **MR. MCLEOD:** I don't have further  
 5 questions for the witness.  
 6 **MR. OLEEN:** I do. If you'd like a  
 7 break, I can wait.  
 8 **PRESIDING OFFICER:** No, that's fine.  
 9  
 10 **RE CROSS EXAMINATION**  
 11 **BY MR. OLEEN:**  
 12 Q. Mr. Boese, I'd like to go back to K.A.R. 5-4-1  
 13 and revisit some things that you testified to  
 14 regarding your attorney's line of questioning  
 15 involving impairment.  
 16 **A. 5-4-1 or (1)(a)?**  
 17 Q. 5-4-1.  
 18 **A. Okay. So the direct well-to-well impairment?**  
 19 Q. Yes.  
 20 **A. Okay. I'm there.**  
 21 Q. I believe you were -- you had a discussion of  
 22 5-4-1(a) and you mentioned something about what  
 23 the chief engineer might require on the  
 24 complaint, impairment complaint report, right?  
 25 **A. Yes, I think -- yeah, we did.**

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1 Q. And I think you pointed out that there -- on  
 2 5-4-1, subsection (b) talks about investigation  
 3 and subsection (1) refers to domestic water  
 4 right owners complaining of impairment and  
 5 subsection (b)(2) talks about non-domestic water  
 6 right owners complaining about impairment,  
 7 right?  
 8 **A. Yes.**  
 9 Q. And I thought I heard you say something about --  
 10 did I hear you acknowledge the chief engineer  
 11 may require a domestic impairment complainant to  
 12 provide the requirements of (b)(2) that are  
 13 normally -- that are definitively required by  
 14 the regulation of non-domestic water right  
 15 impairment complainants?  
 16 **A. I believe I testified, and if I didn't, I'll**  
 17 **clarify the record, that the chief engineer may**  
 18 **require it. It's not automatically required as**  
 19 **it is for a non-domestic. A non-domestic -- a**  
 20 **domestic, the chief engineer may require that**  
 21 **similar type report, I agree with that**  
 22 **100 percent.**  
 23 Q. Okay. And so I wrote down where you said, I  
 24 believe, in the context of impairment as is  
 25 discussed in 5-4-1, you said, domestic users

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1 don't have to fully penetrate the aquifer to  
 2 claim impairment. Is that what you said?  
 3 **A. Can you -- a domestic --**  
 4 Q. I wrote down --  
 5 **A. Okay.**  
 6 Q. -- I thought in the context of your discussion  
 7 of 5-4-1 --  
 8 **A. Uh-huh.**  
 9 Q. -- domestic users don't have to fully penetrate  
 10 the aquifer to claim impairment. Did you say  
 11 that, did I understand that?  
 12 **A. Yeah, I think I prob -- I think I did.**  
 13 Q. Okay.  
 14 **A. I think that's a true statement. I mean, that**  
 15 **was my opinion of that -- of that, yes.**  
 16 Q. Okay. And so I would like you to expound,  
 17 please, because as you and I can acknowledge,  
 18 5-4-1(b)(2), subsection (C) --  
 19 **A. Uh-huh.**  
 20 Q. -- talks about providing data to show the extent  
 21 to which the complainant's well has fully  
 22 penetrated the productive portions of the  
 23 aquifer with water of acceptable quality for the  
 24 authorized use, right?  
 25 **A. It does.**

1 Q. Okay. So I'm just -- I want to make sure I  
2 understand your understanding of this subsection  
3 versus your earlier claim that domestic users  
4 don't have to fully penetrate the aquifer to  
5 claim impairment.

6 **A. Well, it says, provide data to show to the  
7 extent; I don't see where it says it must fully  
8 penetrate the aquifer to claim impairment. It  
9 says the extent. And then it also talks about  
10 an acceptable water quality. So there's two  
11 components; it doesn't say require.**

12 Q. Why do you think it's asking for the data if it  
13 doesn't have a consequence to the investigation?

14 **A. It could have -- it does have a consequence, but  
15 it doesn't say it's required to fully penetrate  
16 the aquifer. They want -- the chief engineer  
17 wants to know to what extent it does. I mean, I  
18 helped develop these regulations, I know what  
19 the intent was of that. And we also made sure  
20 we put in the water quality component because  
21 just because they didn't go deep, the deep might  
22 not be usable water.**

23 Q. So I'm trying to understand why -- you said you  
24 were involved in this -- in the formulation of  
25 this regulation?

1 **A. Yes.**

2 Q. So -- so presumably the data requested is  
3 relevant to determination of whether impairment  
4 has occurred, correct?

5 **A. Yes.**

6 Q. So why did you or the GMD2 Board assist in the  
7 development of a regulation concerning  
8 impairment investigation that asks for data  
9 which you are now saying is not relevant to a  
10 determination of impairment?

11 **A. Well, I did not say it wasn't relevant; it is  
12 relevant information. I'm just saying that  
13 there is nothing in this language, and it's  
14 perfect -- purposely, in my consideration,  
15 because we've had this discussion, from what I  
16 can remember, it was purposely left that way so  
17 that it was not absolutely required that a well  
18 had to fully penetrate the aquifer to be  
19 considered impaired. That's just not for  
20 domestic, I mean, that -- it doesn't say that  
21 for non-domestic either, that it has to fully --**

22 Q. Right.

23 **A. This report is part of the investigation,  
24 absolutely it has to be part of the  
25 investigation; if the well is 20 feet deep and**

1 **A. Certainly, the groundwater management districts  
2 were consulted with many times, we had lots of  
3 back-and-forth discussions with DWR. Very, very  
4 good discussions, I might add, with -- I think  
5 Mr. Barfield did these, if I remember right.  
6 Yeah, 2010.**

7 Q. Okay. And so I'm just trying to understand  
8 why require something if that something doesn't  
9 have an effect on the investigation of  
10 impairment?

11 **A. I don't think I stated it didn't have an effect  
12 on the investigation; it's part of the  
13 investigation. I do not see language in here  
14 that says if the well does not fully penetrate  
15 the aquifer that there cannot be an impairment  
16 complaint. If you can show that to me, I  
17 will -- I will read it and see if I can  
18 understand. It says the report must provide  
19 that data to what extent it fully penetrates the  
20 aquifer. I don't see the language that says the  
21 well must fully penetrate the aquifer to be  
22 considered impaired. Do you see that anywhere  
23 in that regulation?**

24 Q. I don't but this regulation is about the  
25 investigation of impairment complaints, correct?

1 **there's 400 feet of water, well, that should  
2 probably be considered. But it doesn't say it  
3 had to fully penetrate. The chief engineer, in  
4 my opinion, wanted to know what the well that's  
5 claiming to be impaired looks like, depth,  
6 construction, pump, all those things.**

7 Q. But you're telling me that depth doesn't matter  
8 to the --

9 **A. I didn't --**

10 Q. -- ultimate conclusion?

11 **A. You're -- you are totally mischaracterizing, I  
12 did not say depth didn't matter. I am saying --**

13 Q. Okay. Then you please tell me how it's  
14 relevant. You -- you please tell me how this  
15 request to provide data showing the extent to  
16 which a well has fully penetrated the aquifer --

17 **MR. STUCKY: Um --**

18 **BY MR. OLEEN:**

19 Q. -- please show me how it's --

20 **PRESIDING OFFICER: I think maybe I  
21 can -- at least what I'm hearing, and,  
22 Mr. Boese, please tell me if --**

23 **A. Uh-huh.**

24 **PRESIDING OFFICER: -- I'm not  
25 understanding you correctly. I think -- I**



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1 think the way you're reading this data to  
 2 show the extent to which the well is fully  
 3 penetrated means if it has, how much has  
 4 it?  
 5 **A. Absolutely, I think it's a part of the**  
 6 **investigation of knowing how deep and what sort**  
 7 **of construction the well that is claiming to be**  
 8 **impaired is absolutely critical to the**  
 9 **impairment complaint.**  
 10 **PRESIDING OFFICER:** And what I'm  
 11 hearing Mr. Oleen's questions based on does  
 12 not include an interpretation of if?  
 13 **MR. OLEEN:** That's correct.  
 14 **PRESIDING OFFICER:** So you're just  
 15 going to be butting heads unless you  
 16 understand that you're both reading this --  
 17 you're each reading this differently.  
 18 That's where you're not making any progress  
 19 because he is seeing an if interpretation  
 20 in here and you are not.  
 21 **A. Who's seeing the if?**  
 22 **MR. OLEEN:** But --  
 23 **PRESIDING OFFICER:** Am I -- and  
 24 maybe that's your point.  
 25 **MR. OLEEN:** I guess my point is if

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1 the if doesn't matter, then how does the  
 2 extent matter? If it doesn't matter about  
 3 whether or not it's even penetrating the  
 4 aquifer, then why does it matter the extent  
 5 to which it is, if it is?  
 6 **PRESIDING OFFICER:** And I -- I'm not  
 7 trying to answer for the witness, I'm just  
 8 trying to move forward.  
 9 **A. I -- can I say one more thing --**  
 10 **PRESIDING OFFICER:** Please.  
 11 **A. -- and I think I'm going to be done with this**  
 12 **line of questioning, I think? I think there's**  
 13 **been sort of a misunderstanding between you and**  
 14 **me, and that's absolutely fine. The report is**  
 15 **important, the chief engineer needs to know; if**  
 16 **this comes through the GMD, we need to know**  
 17 **where these wells are set. We had that**  
 18 **discussion earlier about practical saturated**  
 19 **thickness; I don't know if I want to go there.**  
 20 **If the bottom 80 feet is clay, does it matter if**  
 21 **the applicant -- or if the well was fully**  
 22 **penetrated or not? Yeah, you bet -- you bet it**  
 23 **does because fully penetrated into clay doesn't**  
 24 **mean anything. It's got to be in a sand zone.**  
 25 **So I think the chief engineer needs to know**

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1 **where that well is set at, if it's in a**  
 2 **productive part of the aquifer. I am just**  
 3 **merely stating that this does not say if the**  
 4 **well does not fully penetrate the aquifer, they**  
 5 **can't claim impairment. It doesn't say that.**  
 6 **It just says what -- to what extent is it done,**  
 7 **and then the chief engineer can take that. If**  
 8 **the chief engineer determines it has to fully**  
 9 **penetrate the aquifer, that's part of the**  
 10 **determination by the chief engineer.**  
 11 **BY MR. OLEEN:**  
 12 Q. Maybe -- maybe the confusion is when I was  
 13 saying -- or when we were having the discussion  
 14 about whether or not they can claim impairment,  
 15 I don't mean -- I wasn't talking about whether  
 16 or not they are precluded from ever filing the  
 17 piece of paper making that claim. I meant  
 18 whether they can make a valid claim for  
 19 impairment?  
 20 **A. I think that report is part of that**  
 21 **investigation.**  
 22 Q. So if we have a domestic well, or even a  
 23 non-domestic well as you pointed out because  
 24 this request for this certain type of data can  
 25 apply to both types of wells, if we have a -- a

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1 well that is 20 feet deep and it does penetrate  
 2 the aquifer, but then for whatever reason the  
 3 water level is lowered to where it is now 3 feet  
 4 or 5 feet below this existing well and  
 5 someone -- and the owner of the well that now  
 6 cannot reach the water thinks that it is because  
 7 of someone or some person's pumping activity  
 8 that is junior to them, are you saying it is --  
 9 it doesn't -- it's not required before the  
 10 person -- the person's well that can't reach the  
 11 water, it's not required that they extend the  
 12 depth of their well by 3 to 5 feet to now reach  
 13 the lower water level, are you saying that they  
 14 can claim impairment without having to first  
 15 drill down to reach that water that's not very  
 16 far below?  
 17 **A. I didn't say that at all. I'm just saying that**  
 18 **there's a report that's required by this**  
 19 **regulation to what extent does that well**  
 20 **penetrate. And it's up to the Division of Water**  
 21 **Resources' investigation or if it goes to the**  
 22 **GMD as a remedy for the chief engineer to decide**  
 23 **upon.**  
 24 Q. So you think the chief engineer could decide  
 25 that in that situation that I just presented,

1 and I know it doesn't have a lot of facts, but  
 2 in that situation the chief engineer could say,  
 3 I'm not going to find impairment until you first  
 4 drill your well down another 3 to 5 feet to  
 5 reach the water?  
 6 **A. Sure, the chief engineer could find that. I'm**  
 7 **just saying it's not an automatic requirement in**  
 8 **this regulation that it fully has to penetrate**  
 9 **the aquifer. It's up to the chief engineer to**  
 10 **decide that.**

11 **MR. STUCKY:** I'm going to object as  
 12 to this. I tried to be very, very patient,  
 13 but I'm finally going to object as to asked  
 14 and answered with this line of questioning.

15 **PRESIDING OFFICER:** Yeah, I -- we're  
 16 not making any progress on this.

17 **MR. OLEEN:** Well, it doesn't matter  
 18 what I think about Mr. Stucky's  
 19 characterization, you agree with it, so  
 20 I'll end my line of questioning. Thank  
 21 you, I have no further questions.

22 **PRESIDING OFFICER:** Okay.  
 23 Ms. Wendling.

24 **MS. WENDLING:** I have no further  
 25 questions.

1 Thank you to everyone.  
 2 (Whereupon, the proceedings were  
 3 adjourned at 4:15 p.m.)  
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1 **PRESIDING OFFICER:** Mr. Boese, you  
 2 are excused.  
 3 **A. I thought you were going to ask me a question**  
 4 **the way you were looking at me.**

5 **PRESIDING OFFICER:** Mr. Stucky?

6 **MR. STUCKY:** Madam Hearing Officer,  
 7 as much as I would like to put a very dear  
 8 mentor of mine on the stand since he formed  
 9 the Groundwater Management District, as  
 10 much as I would like to put him in the hot  
 11 seat as a former partner of mine, the  
 12 District rests.

13 **PRESIDING OFFICER:** Ms. Wendling.

14 **MS. WENDLING:** All right. The  
 15 Intervenors call George Austin. I will  
 16 offer that if we want to start fresh next  
 17 time with the Intervenors, I will not be  
 18 upset at all. I know it's been a very long  
 19 week, and Mr. Austin is perfectly willing  
 20 to come back.

21 **PRESIDING OFFICER:** I've thought  
 22 about that. Everybody's ready to go, okay.  
 23 This is a good time to take a break. So  
 24 we'll pick it up with the Intervenors' case  
 25 next time. We are in recess, it's 4:15.

1 C E R T I F I C A T E  
 2 STATE OF KANSAS )  
 3 SEDGWICK COUNTY ) ss:  
 4

5 I, Nancy L. Rambo, a Certified Shorthand  
 6 Reporter, within and for the State of Kansas, do  
 7 hereby certify that the foregoing is a true and  
 8 correct transcript of the proceedings had at the  
 9 time and place hereinbefore set forth.

10 I further certify that I am not a relative  
 11 or employee or attorney or counsel of any of the  
 12 parties, nor am I a relative or employee of such  
 13 attorney or counsel, nor am I financially  
 14 interested in the action.

15 WITNESS my hand and official seal at  
 16 Wichita, Sedgwick County, Kansas, this 23rd day of  
 17 March, 2020.

18 NANCY L. RAMBO, R.P.R., C.S.R.  
 19 Registered Professional Reporter  
 20 Certified Shorthand Reporter

21 Costs:  
 22  
 23  
 24  
 25

	3032:23;3033:23; 3034:12	<b>action (4)</b> 2838:18;2876:10; 2905:3;3047:20	2970:19	2920:15,20
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9 and Sedgwick Counties, )  
10 Kansas, )  
11 Pursuant to K.S.A. 82a-1901  
12 and K.A.R. 5-14-3a  
13  
14 FORMAL HEARING  
15 VOLUME XII  
16  
17 This matter came on for Formal Hearing  
18 before Constance C. Owen, Presiding Officer, at  
19 the Kansas Learning Center for Health, 505 Main  
20 Street, Halstead, Harvey County, Kansas,  
21 commencing at 8:35 a.m., on the 3rd day of  
22 February, 2021.  
23  
24  
25

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1 A P P E A R A N C E S  
2  
3 City of Wichita, Department of Public  
4 Works and Utilities, appears via Zoom  
5 Videoconference by their attorney, Brian K.  
6 McLeod, Deputy City Attorney, 435 North Main, 13th  
7 Floor, Wichita, Kansas 67202.  
8  
9 Equus Beds Groundwater Management District  
10 No. 2 appears via Zoom Videoconference by their  
11 attorneys, Thomas A. Adrian and David J. Stucky,  
12 Adrian & Pankratz, 301 North Main, Suite 400,  
13 Newton, Kansas 67114.  
14  
15 Division of Water Resources appears via  
16 Zoom Videoconference by their attorney, Stephanie  
17 Murray, Kansas Department of Agriculture, 1320  
18 Research Park Drive, Manhattan Kansas 66502.  
19  
20 Intervenors appear by their attorney,  
21 Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
22 Kansas 67056.  
23  
24  
25

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1 **PRESIDING OFFICER:** Okay. We are  
2 now on the record. My name is Constance C.  
3 Owen, and I am serving as presiding officer  
4 in these proceedings. The title of the  
5 matter before us today is In the Matter of  
6 the City of Wichita's Phase II Aquifer  
7 Storage and Recovery Project in Harvey and  
8 Sedgwick Counties, Kansas, Case Number 18  
9 WATER 14014.

10 It is February 3rd, 2021, we are located  
11 at the Kansas Learning Center for Health in  
12 Halstead, Kansas. This is a continuation  
13 of a hearing that last recessed in March of  
14 2020. We were unable to reconvene due to  
15 the COVID-19 pandemic, and that pandemic  
16 still requires significant restrictions,  
17 and so we will have masks on to the extent  
18 that we can, and the witnesses may be  
19 allowed to remove those for the court  
20 reporter's purposes.

21 We also have a hybrid format that is  
22 taking place. In this particular in-person  
23 location, we have our court reporter, we  
24 have Tessa Wendling, who's the attorney for  
25 the Intervenor, her witnesses, and me, and

1 a couple of technical assistants and no one  
2 else is participating in person. Remotely,  
3 by electronic means, we have the other  
4 attorneys and parties, and I think at this  
5 time, we'll have them state appearances,  
6 followed up by our in-person lawyer. So  
7 let's start with the City.

8 **MR. MCLEOD:** Brian McLeod, deputy  
9 city attorney appearing for the City of  
10 Wichita, Kansas.

11 **PRESIDING OFFICER:** And for DWR?

12 **MS. MURRAY:** Stephanie Murray for  
13 DWR.

14 **PRESIDING OFFICER:** And for  
15 Groundwater Management District No. 2?

16 **MR. ADRIAN:** I'm Tom Adrian and Dave  
17 Stucky appear on behalf of Equus Beds  
18 Groundwater Management District No. 2.

19 **PRESIDING OFFICER:** And for the  
20 Intervenor?

21 **MS. WENDLING:** Tessa Wendling.

22 **PRESIDING OFFICER:** Okay. Thank you  
23 very much. Also this hearing is required  
24 to be accessible to the public, so the  
25 Division of Water Resources has kindly set

1 up a YouTube link, which is posted on the  
2 DWR website. If anyone is joining by the  
3 Zoom or GoTo link, please mute your  
4 microphones. We are endeavoring to have a  
5 very delicate balance of how our audio is  
6 working, so it will simplify things  
7 tremendously if -- if you are muted, and  
8 then the attorneys can un-mute when it's  
9 appropriate for them to speak.

10 The public is encouraged, allowed,  
11 welcome to provide written comments. All  
12 written comments should be emailed or  
13 mailed to Ronda Hutton at the Division of  
14 Water Resources, and her contact  
15 information is also posted on the Division  
16 of Water Resources' web page, the page for  
17 the Wichita ASR project. The deadline for  
18 submitting public comments is 5:00 p.m. on  
19 February 26, 2021. We have held the dates  
20 of February 18 -- February 18 and 19, 2021  
21 to finish this hearing, if necessary, after  
22 this week.

23 For the record, I'll also note on  
24 January 4, 2021, DWR issued a news release  
25 regarding the details of this resumed

1 hearing. On November 2, 2020, the new  
2 chief engineer, Earl Lewis, issued a notice  
3 affirming the continued delegation to me to  
4 preside over this matter. Previously, this  
5 authority had been delegated to me by  
6 former Chief Engineer David Barfield and  
7 former Acting Chief Engineer Chris  
8 Beightel.

9 On December 30, 2020, Chief Engineer  
10 Lewis issued an agreed waiver of Kansas  
11 Administrative Regulation 5-12-3. In  
12 short, that regulation required this  
13 hearing to take place physically within the  
14 geographic boundaries of GMD2. However,  
15 the COVID-19 virus made that impractical.

16 The parties agreed to a waiver of that  
17 regulation to achieve as timely a  
18 conclusion of this matter as practical.  
19 Generally, the parties agreed to the  
20 proceedings being conducted fully or  
21 partially in a visual -- in a virtual  
22 format and that any in-person proceedings  
23 take place within a 30-mile radius of the  
24 boundaries of GMD2.

25 I would like to thank the parties, all

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1 of whom cooperated most professionally to  
 2 achieve this waiver. I also want to thank  
 3 Stephanie Murray who the took the labor in  
 4 order to get it drafted and executed. I  
 5 would also like to note the extraordinary  
 6 level of professionalism, cooperation, and  
 7 patience shown by all counsel and their  
 8 clients as we dealt with the unforeseen and  
 9 unavoidable delays caused by this pandemic.  
 10 I also thank each of you in person today  
 11 for compliance with public safety measures,  
 12 including wearing masks and social  
 13 distancing. In addition, all parties have  
 14 agreed it is appropriate for me to take  
 15 administrative notice of the Wichita ASR  
 16 annual accounting reports for 2013, 2014,  
 17 2015, and 2016, which are located on DWR's  
 18 website on the Wichita ASR page.  
 19 And now we are ready to resume  
 20 testimony, and at this time I will turn the  
 21 case over to Tessa Wendling who will  
 22 present her witnesses.  
 23 (Reporter requests clarification  
 24 of Mr. McLeod.)  
 25 **PRESIDING OFFICER:** Pardon me just a

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1 moment, Brian, the court reporter was  
 2 unable to hear you.  
 3 **MR. MCLEOD:** I'm sorry. I have a  
 4 couple of housekeeping matters that I think  
 5 we should take up before starting  
 6 testimony.  
 7 **PRESIDING OFFICER:** I'm sorry, I  
 8 should have asked. Please go ahead.  
 9 **MR. MCLEOD:** When we were last  
 10 together, everybody may remember that  
 11 Mr. Pope and Mr. Boese both had difficulty  
 12 remembering whether the -- whether the  
 13 Groundwater Management District had in the  
 14 ASR prior proceedings opposed the concept  
 15 of passive recharge credit, and I -- I  
 16 think I pressed that line of questioning  
 17 perhaps too aggressively, but coming back  
 18 and checking through documents, we  
 19 discovered that, indeed, the Groundwater  
 20 Management District did in its  
 21 recommendation on the ASR permits oppose  
 22 the concept of passive recharge credits,  
 23 and I wanted to -- I believe I mentioned it  
 24 in an email and you asked me to put that on  
 25 record. And so to dispel any -- any

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1 unwarranted implication from my last  
 2 questioning, we -- we will stipulate that  
 3 we know, in fact, the Groundwater  
 4 Management District did recommend against  
 5 passive recharge credits in those prior  
 6 proceedings.  
 7 **PRESIDING OFFICER:** Thank you.  
 8 **MR. MCLEOD:** The other thing that --  
 9 **PRESIDING OFFICER:** Are there any  
 10 other preliminary matters before we begin  
 11 with testimony?  
 12 **MR. MCLEOD:** One other and this --  
 13 (Reporter requests clarification  
 14 of Mr. McLeod.)  
 15 **PRESIDING OFFICER:** Brian, I'm  
 16 sorry, I think you're going to need to  
 17 speak a little louder for our court  
 18 reporter.  
 19 **MR. MCLEOD:** Okay. There is one  
 20 other matter, and it has to do with the  
 21 exhibits that came from counsel for  
 22 Intervenors yesterday, which exhibits  
 23 included some excerpts from accounting  
 24 reports on ASR, and as to those the City  
 25 has no objection. I think all the parties

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1 have said those full documents can be  
 2 admitted, and so the excerpts can as well.  
 3 The other documents that came with that  
 4 email are all somewhat problematic, and  
 5 I've had a very short span of time to  
 6 review these issues, so if -- if any other  
 7 counsel think that I'm wrong about salient  
 8 facts, feel free to point out to me where  
 9 these things were provided in discovery.  
 10 But I think the state of facts to be in  
 11 the Intervenors' interrogatory responses, I  
 12 believe the words minimum desirable  
 13 streamflow are not mentioned. The study on  
 14 minimum desirable streamflow, I believe,  
 15 was not provided in discovery. A prior  
 16 version of it appeared as Exhibit 4 when  
 17 the Intervenors' notebooks were prepared,  
 18 but I don't think that the City had it  
 19 during discovery or was advised of the  
 20 issues during discovery or that it was  
 21 going to be an area of contention by the  
 22 Intervenors or that they were going to  
 23 offer either testimony or exhibits to that  
 24 set of issues.  
 25 Also, the graph that appears to depict

1 1930's streamflow and modeled streamflow,  
2 we have not seen that document previously  
3 in discovery. We have not seen the CV of  
4 Mr. Richard Basore in discovery, and to the  
5 extent that that is being provided in an  
6 attempt to qualify Mr. Basore as some kind  
7 of an expert or witness with special  
8 knowledge, that's extremely untimely.  
9 And so as to -- as to all of the  
10 exhibits that came yesterday, other than  
11 the excerpts from accounting reports, the  
12 City objects and will object to their  
13 submission and admissibility and will  
14 object to the Intervenor's offering  
15 testimony, expert or otherwise, to the  
16 subject matter area of minimum desirable  
17 streamflow.

18 **PRESIDING OFFICER:** Okay.  
19 Ms. Wendling, would you like to respond?  
20 **MS. WENDLING:** Sure. Exhibit 4, the  
21 article provided, is the same article  
22 merely indicating the website where it is  
23 available. There's nothing different about  
24 it, it's been in our exhibit notebook the  
25 entire time; I thought providing the actual

1 hadn't necessarily planned to admit it as  
2 an exhibit.  
3 And the final graph provided is part of  
4 Mr. Austin's analysis that he has done and  
5 is a visual representation of oral  
6 testimony that he plans to give. For me,  
7 it's helpful to see the visual; if the  
8 document itself is not admitted as an  
9 exhibit, it's not material to me. I think  
10 the visual representation is helpful as he  
11 provides his testimony.  
12 And as to whether or not in discovery or  
13 in our brief I used the words minimum  
14 desirable streamflow, I would need some  
15 time to go back and look, it's been two  
16 years, and I simply don't recall. Minimum  
17 desirable streamflow, as counsel has  
18 indicated, and the impacts to that are  
19 significant, and I think it's in the public  
20 interest that we consider any available  
21 testimony on minimum desirable streamflow  
22 due to the importance and due to the mutual  
23 desire of everyone to protect both the  
24 aquifer and the stream.  
25 **PRESIDING OFFICER:** Mr. McLeod.

1 location of the document would be helpful.  
2 With regards to Mr. Basore's resume --  
3 **MR. ADRIAN:** We are -- we're not  
4 hearing her.  
5 **MR. STUCKY:** Yeah, we're not hearing  
6 a word Tessa's saying if she's talking.  
7 **MS. WENDLING:** I'll start over,  
8 forgot to un-mute. I will probably do that  
9 a lot.  
10 Exhibit 4 that I provided yesterday was  
11 a reprint of an article including the web  
12 address or site that the document is  
13 available on. It is the same article,  
14 nothing changed, I thought as a convenience  
15 it would be helpful for everyone to know  
16 where the document came from based on  
17 comments made in previous rounds of  
18 hearings asking that specific question.  
19 The resume for Mr. Basore is not an  
20 attempt to qualify him as an expert; it is  
21 a document that I thought helpful to show  
22 his background. Mr. Basore will testify to  
23 his background and experience. However,  
24 the document was for information purposes.  
25 I planned to admit it for identification,

1 **MR. MCLEOD:** And to reiterate about  
2 the document that was Exhibit 4, we  
3 recognize that it's closely similar to a  
4 document that is Exhibit 4 in the  
5 Intervenor's exhibit book, but we don't  
6 believe that it was ever provided in  
7 discovery while discovery for the case was  
8 open, so the City has never had any  
9 opportunity to explore the Intervenor's  
10 position on minimum desirable streamflow  
11 when discovery was actually open in the  
12 case.  
13 **PRESIDING OFFICER:** Ms. Wendling.  
14 **MS. WENDLING:** The report of the  
15 report that Mr. Austin had used in his  
16 analysis, and I don't recall if it was -- I  
17 don't recall if it was provided so I  
18 will -- if Brian says it wasn't provided,  
19 then it might not have been provided in  
20 discovery, but it's been in the binder  
21 since last -- or December of, whenever we  
22 started this, '19.  
23 **MR. MCLEOD:** I would add I'm not  
24 seeing the document referenced in  
25 Mr. Austin's report where he gives a list

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1 of documents that he -- that he reviewed,  
 2 and at the end of his report, a list  
 3 of links to documents, references, and  
 4 their hyperlinks, I'm -- I'm not seeing the  
 5 one that's Exhibit 4.  
 6 **PRESIDING OFFICER:** I'm going to  
 7 take a minute to take a look at this  
 8 exhibit. We're going to go off the record  
 9 for a minute and do some technical  
 10 adjustments while I review these.  
 11 (Thereupon, a recess was taken;  
 12 whereupon, the following was had.)  
 13 **PRESIDING OFFICER:** We are now back  
 14 on the record, thank you everyone for your  
 15 patience.  
 16 Taking Mr. McLeod's objections out of  
 17 order, the CV of Richard Basore,  
 18 Ms. Wendling makes clear that he's not --  
 19 there's no attempt to qualify him as an  
 20 expert and he will not be questioned as  
 21 such. So I see his CV as -- as -- it's  
 22 harmless to have it in the record, so  
 23 I'm -- I think that's fine to include that.  
 24 The minimum desirable streamflow  
 25 exhibit, the, apparently, reprint,

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1 smaller-typed version in Exhibit 4 that was  
 2 recently offered, that appears to be the  
 3 same as Exhibit 4 that has been in the  
 4 Intervenors' exhibits for sometime, the  
 5 parties have had access to that exhibit,  
 6 and minimum desirable streamflow has had a  
 7 significant amount of testimony, I believe,  
 8 by all the other parties, at least by many  
 9 witnesses before today, and it is a  
 10 significant and relevant aspect of what  
 11 needs to be decided, so I'm going to allow  
 12 that exhibit to remain.  
 13 The graphic illustration, which I think  
 14 is Exhibit 25, Ms. Wendling describes that  
 15 that's just an illustration that Mr. Austin  
 16 will be using to explain his testimony,  
 17 that she does not intend to offer it as an  
 18 exhibit to be admitted, so I will allow him  
 19 to use that to demonstrate and help me  
 20 understand his testimony.  
 21 Have I reviewed all of your objections,  
 22 Mr. McLeod?  
 23 **MR. MCLEOD:** I -- I note one more,  
 24 as we were looking through documents,  
 25 minimum desirable streamflow is actually

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1 not mentioned in Mr. Austin's report as a  
 2 subject that he's going to address, so  
 3 that -- that entire major subject has been  
 4 completely excluded from his expert  
 5 disclosure. Given the amount of flack that  
 6 the City has consistently had in the case  
 7 over expert reports and disclosures, I  
 8 think it would be tremendously unfair to  
 9 let Mr. Austin testify as an expert to an  
 10 issue that's a major issue but was  
 11 completely excluded from his expert  
 12 disclosure and report.  
 13 **MR. STUCKY:** I'm going to go ahead  
 14 and weigh in here just because I have his  
 15 expert report right in front of me. I'm on  
 16 the third page of his expert report, and I  
 17 don't know if he uses the term minimum  
 18 desirable streamflow or not, I need to read  
 19 through that again, but that second full  
 20 paragraph on the third page, he talks about  
 21 river flows and how recharge, artificial  
 22 recharge impacts river flows. Does he say  
 23 minimum desirable streamflow? I don't  
 24 know, but he talks about river flows,  
 25 quote, infiltrating into the basin storage

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1 area index cell -- cells or outflowing to  
 2 the river.  
 3 Likewise, in his conclusions, I'm  
 4 quoting his report, increasing recharge  
 5 either increases flow from the aquifer to  
 6 the Arkansas and Little Arkansas Rivers or  
 7 decreases flow from the rivers to the  
 8 aquifer, that's on the fourth page of his  
 9 report. I mean, there's a number of places  
 10 where he talks about river flow. Does --  
 11 you know, again, does he use the term  
 12 minimum desirable streamflow, I don't know,  
 13 but there's -- there's different ways to  
 14 explain the concept, and I don't think the  
 15 mere fact that he doesn't use that term is  
 16 prohibitive for him to be able to testify  
 17 to it.  
 18 **MR. MCLEOD:** In response to that, I  
 19 would say that everywhere that Mr. Austin  
 20 is discussing those flow issues in his  
 21 report, it is part of his criticism of the  
 22 accounting method for the AMCs; it is not  
 23 part of any analysis that there's any  
 24 impairment of minimum desirable streamflow,  
 25 there's no analysis in the report of

1 minimum desirable streamflow or -- or what  
2 it is for these reaches of the river that  
3 are adjacent to the aquifer. It's been  
4 completely left out of his expert report  
5 and disclosures.  
6 **PRESIDING OFFICER:** Ms. Wendling?  
7 **MS. WENDLING:** Mr. Stucky explained  
8 it very clearly, I don't believe the words  
9 minimum desirable streamflow are in  
10 Mr. Austin's report. He testifies -- or  
11 his report talks about the interchange and  
12 flow between the river and the aquifer.  
13 The testimony he has is regarding  
14 factual gage data of actual streamflow  
15 during drought conditions. It's not -- he  
16 did not do independent analysis of whether  
17 or not there will be an impact to  
18 streamflow. He speaks merely on what has  
19 happened during past drought scenarios.  
20 **PRESIDING OFFICER:** Keeping in mind  
21 the latitude that there exists for  
22 administrative hearings versus strict civil  
23 litigation, we're not tied directly to  
24 otherwise applicable rules of evidence, and  
25 as I glance over this, and if this needs to

1 be revisited during Mr. Austin's testimony,  
2 then we could revisit it, but at this time,  
3 I see that what appears to be in Exhibit 4  
4 is consistent with what Ms. Wendling is  
5 describing and that since Mr. Austin  
6 addressed the inter -- interplay of  
7 streamflow and aquifer levels that this  
8 appears to be related to his report and his  
9 anticipated testimony, so I'm going to  
10 allow it for now. If a further objection  
11 needs to be lodged later, then I'm sure we  
12 can address that at that time.  
13 Any other preliminary matters before we  
14 start testimony?  
15 **MR. MCLEOD:** Not from the City.  
16 **PRESIDING OFFICER:** Okay. Hearing  
17 none, Ms. Wendling, you may present your  
18 first witness, and we will need to have him  
19 sworn in to begin with.  
20 **MS. WENDLING:** The Intervenors call  
21 George -- the Intervenors call George  
22 Austin.  
23 //  
24 //  
25 //

1 GEORGE AUSTIN, P.E.,  
2 having been first duly sworn, was  
3 examined and testified as follows:  
4

5 **DIRECT EXAMINATION**  
6 **BY MS. WENDLING:**

7 Q. All right. For all parties involved, I'll draw  
8 your attention to what I'd like to mark for  
9 identification as Intervenors' Exhibit 2, which  
10 is Mr. Austin's expert report and CV.

11 Mr. Austin, will you give us a overview of  
12 your background, education, work history, and  
13 any certifications?

14 **A. Yes. My education background is, from a college**  
15 **standpoint, is I have a degree in civil**  
16 **engineering from Kansas State University and a**  
17 **degree from Emporia State in physics.**

18 **I began my work career as an assistant**  
19 **county engineer in Finney County, Kansas, Garden**  
20 **City, and the remainder of my career was with**  
21 **the Kansas Department of Agriculture and the**  
22 **Division of Water Resources, mainly in the water**  
23 **structures section, first as a dam safety**  
24 **engineer, then as section head overseeing the**  
25 **section that was in charge of the obstruction of**

1 **streams. And during that tenure, I also served**  
2 **as an administrative hearing officer in**  
3 **connection with abandonment of water rights,**  
4 **termination of water rights.**

5 **And after that assignment, I entered the**  
6 **interstate litigation team position, worked with**  
7 **the attorneys associated with the Compact,**  
8 **violations or enforcement on the Arkansas River**  
9 **and then also on the Republican River. In those**  
10 **two situations, much of that effort was in**  
11 **connection with -- the Compact is on surface**  
12 **water distribution, and inasmuch as groundwater**  
13 **affected the delivery of surface water to -- to**  
14 **the state boundary in both cases, the Supreme**  
15 **Court ruled that groundwater needed to be**  
16 **regulated to prevent depletion of streamflow**  
17 **that was owed Kansas. So in some respects that**  
18 **was a direct effect on what I -- how I viewed**  
19 **water rights, groundwater pumping in connection**  
20 **with streamflow.**

21 **And since retiring from the Division of**  
22 **Water Resources, I've had clients that I worked**  
23 **for to try to assess the delivery of water on**  
24 **the Arkansas River at various points to**  
25 **irrigation districts. The model that I used was**

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1 one I developed in the Ark River lawsuit that  
 2 became the settlement agreement method of  
 3 accounting for water at state line. And further  
 4 extended it from the state line to Garden City,  
 5 Kansas for my clients to try to make sure that  
 6 there's a fair apportionment among the  
 7 irrigation districts along the Arkansas River to  
 8 Garden City.

9 Q. Do you hold any licenses or certifications?

10 A. I have a professional engineer's license with  
 11 the -- with Kansas, and I have had a license on  
 12 land surveying, which I went inactive this past  
 13 year on, mainly because I don't practice it much  
 14 any -- anymore; and, secondly, of course,  
 15 continuing education is required to maintain  
 16 your license, and that was just a step too much  
 17 for -- for me to handle since I didn't have any  
 18 income on land surveying.

19 Q. You mentioned that you worked on a settlement  
 20 accounting model, can you elaborate more on what  
 21 your role was with that?

22 A. Well, one of the disputed issues in that  
 23 interstate original lawsuit was the fact that  
 24 water released from John Martin Reservoir, which  
 25 is about 60 miles upstream of the

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1 Kansas-Colorado state line, was reaching Kansas  
 2 in a altered state from what the release would  
 3 be. In other words, the ditches along that  
 4 60-miles reach would step on Kansas' release  
 5 from John Martin, divert it onto their lands,  
 6 and then whatever we got was the return flows  
 7 from those canals. And, you know, a four-day  
 8 release of fairly high discharge would end up  
 9 reaching the state line at a almost unusable  
 10 rate of discharge and greatly diminished, unless  
 11 you counted for 20 days or something like that.

12 So in looking at the Compact, it addressed  
 13 the John Martin release and said that the state  
 14 line -- water at the state line should be viewed  
 15 as if it were being discharged from the dam, and  
 16 so I developed a model that would take into  
 17 account normal losses of transport through that  
 18 60-mile reach and identified what the  
 19 hydrograph, what that release would look like at  
 20 the state line if not interfered with by  
 21 Colorado ditches and groundwater appropriated.

22 And after some negotiation, that was  
 23 accepted by Kansas and Colorado, with some  
 24 modifications, it's part of the negotiation,  
 25 and -- and was then recommended by the special

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1 master in the case to the U.S. Supreme Court and  
 2 in 2009 was accepted as part of the accounting  
 3 process that is used by the Compact to make sure  
 4 Colorado is not diverting Kansas water  
 5 inappropriately.

6 And since that time, I don't believe  
 7 they've had to -- well, they may have had one  
 8 time where they had to place water in John  
 9 Martin on account to -- to basically pay for  
 10 depriving Kansas of some water. But it's  
 11 basically the law of the river from the  
 12 standpoint of delivering releases from John  
 13 Martin Reservoir.

14 Q. Okay. And have you, other than that model, have  
 15 you worked with or reviewed other models -- oh,  
 16 sorry. Other than this model, have you worked  
 17 with or reviewed other models as part of your  
 18 career?

19 A. Yes, part -- part of my role in the lawsuit  
 20 was -- was to review and be familiar with what  
 21 was also accepted as part of the case, it's  
 22 called the hydrologic-institutional model, which  
 23 at its root base looks at groundwater  
 24 diversions. It's basically a MODFLOW type model  
 25 that Steve Larson, who developed it, developed

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1 the predecessor for USGS to the MODFLOW model.  
 2 And in addition looking at diversions and --  
 3 surface water diversions and other -- other  
 4 impacts to river flow.

5 And so as part of that effort, I was  
 6 trained by -- attended training by USGS on the  
 7 MODFLOW model, not so much to operate it as a  
 8 model, though I have done simple models, nothing  
 9 as complex as the Equus Beds, but in order to  
 10 familiarize myself with the inputs, what the  
 11 outputs should look like, how the model  
 12 operates.

13 Q. As you've been to continuing education, what --  
 14 and what courses or conferences have you taken  
 15 or attended to maintain your expertise in this  
 16 area?

17 A. In regard to groundwater modeling, I attended a  
 18 course in Denver, Colorado at the Federal Center  
 19 with USGS to -- it's a multiday course to  
 20 develop MODFLOW models, operate them, look at  
 21 things such as boundary conditions, typical  
 22 aquifer characteristics, and -- and produce a  
 23 report of how that model operated.

24 And each team within that course developed  
 25 models on different scenarios. The team I

1 worked on actually had a aquifer that  
2 boundary -- main boundary was a stream, a river,  
3 and so we had to develop boundary conditions for  
4 that river and also test the pumping and model  
5 that and its effect not only on the river but  
6 on -- on the aquifer as a whole.

7 In addition, I've attended several U.S.  
8 Corps of Engineers' courses and training in  
9 regard to surface water models, such as  
10 Hydrologic Engineering Center RAS, River  
11 Analysis System, and -- HEC-RAS. And so some of  
12 that goes way back to attending corps training  
13 in Tulsa regarding dam breaks because as noted  
14 in my CV I spent a lot of time on safety of dams  
15 and -- and the way rivers operate when bridges,  
16 dikes, and dams are placed on them.

17 Q. And what have you been doing since leaving DWR?

18 A. Since leaving DWR, initially, I continued  
19 working on some of the interstate things under  
20 private contract with the -- with the State of  
21 Kansas, and then otherwise I've been working on  
22 some groundwater user applications, water  
23 rights, mostly in connection with sand and  
24 gravel operations, and -- and then as I  
25 mentioned earlier on the Arkansas River in

1 connection with the streamflows and distribution  
2 to ditches. And several small projects  
3 regarding -- for instance, one in Scott County  
4 where the County put in an inadequate culvert,  
5 and so there was a action, a civil action  
6 against the County in regards to flooding  
7 farmers' homesteads. So some -- some projects  
8 such as that.

9 Q. And how would you describe, based on your  
10 experience, the relationship between groundwater  
11 and surface water?

12 A. Well, they are -- they are an integrated,  
13 connected system inasmuch as -- and in  
14 connection with those lawsuits that I -- the  
15 interstate lawsuits, even though those were  
16 surface water Compacts, inasmuch as the  
17 groundwater pumping affected the responsibility  
18 of the upstream states that deliver water to  
19 Kansas, that was considered to be a direct  
20 impact -- impact on surface water flow and it  
21 can be modeled and accounted for.

22 In DWR, when I began, it was clear that  
23 from the standpoint administratively, the  
24 groundwater and surface water were separate  
25 inasmuch as how they were administered and water

1 rights. And so until certain legislative  
2 actions were taken, such as an Environmental  
3 Coordination Act, state water planning statutes,  
4 from a water rights standpoint, they tended to  
5 be separate.

6 I remember Warren Lutz, who was a  
7 predecessor to Lane Letourneau in water rights,  
8 explained to me that for the City of Florence,  
9 the water right was a surface water right even  
10 though it would flow from -- from a spring  
11 because once it was out of the ground, it was a  
12 surface water right. If they had put the -- had  
13 put a well into the spring while it was still  
14 groundwater, it would have been a groundwater  
15 right. So, you know, so that physical  
16 separation was clearly, administratively, what  
17 DWR historically looked at water rights.

18 I think with the lawsuits, the Ark River  
19 Original Number 105, we -- we clearly saw from  
20 the standpoint of interstate actions that they  
21 were connected, and I -- I think if you look at  
22 statutory and regulatory efforts by the agency,  
23 it reflects that trend. So I think clearly when  
24 you look at groundwater, especially things that  
25 are close to the river or a stream, then you

1 have to take in some consideration of what  
2 amount of that diversion, groundwater diversion  
3 is actually withdrawing water from the stream.

4 Q. And it's your understanding that modeling can  
5 help you understand what groundwater diversion  
6 is actually coming from the stream?

7 A. Well, if you're going to account for quantities  
8 and have a measurement of how much is either  
9 being lost to the stream or is -- the stream is  
10 contributing to the aquifer in terms of  
11 recharge, the model is the only way you can  
12 quantify it beyond doing some base flow  
13 analysis.

14 Streamflow is really kind of two  
15 components. The main component is what we call  
16 runoff component, it's water that -- or excess  
17 precipitation, it is water that runs off the  
18 surface of the land and enters the river, and  
19 that's when you oftentimes see the peaks, which  
20 may be flooding or -- but in addition to that,  
21 there is a base flow component, and base flow is  
22 groundwater discharge into the river or stream.

23 And you can do a detailed analysis. In  
24 fact, in looking at the USGS modeling report,  
25 2013-5042, I believe it is, it -- as some of the

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1 boundary areas, they had to -- it appears they  
 2 had to look at that, there may actually be a  
 3 report on -- on that base flow study, but I have  
 4 not reviewed that or did not review that before  
 5 performing my expert report and analysis related  
 6 to that. But just as I mentioned in the -- in  
 7 the MODFLOW courses that I took, we had to do  
 8 that sort of thing or make a flat assumption of  
 9 what the flows were and the interaction was.  
 10 So base flow is really the -- the element  
 11 of flow that the minimum desirable streamflow is  
 12 part of. So -- and in some of the process of  
 13 developing minimum desirable streamflow, it  
 14 appears the base flow and MDS are used  
 15 interchangeably to a certain extent. But it is  
 16 a lower limit of base flow that is regulatory --  
 17 well, actually statutory on streams.  
 18 Q. So if I heard you correctly, the base flow is  
 19 lower or greater than minimum desirable  
 20 streamflow?  
 21 A. Base flow is a variable depending on groundwater  
 22 levels, the amount of discharge from  
 23 groundwater. There's a part of it that I recall  
 24 is the bank storage element that is transitory,  
 25 transient and temporary where when high flows of

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1 runoff come down a stream, they, at that higher  
 2 stream level, they go into the bank and raise  
 3 the ground -- the groundwater level immediately  
 4 adjacent to the bank. And then as that stream  
 5 goes back to a lower flow, that water comes out  
 6 and reenters the stream at --  
 7 (Reporter requests clarification  
 8 of the witness.)  
 9 A. -- reenters the stream at a later time.  
 10 And another aspect is -- is the main  
 11 aquifer, depending on its level, discharges base  
 12 flow at different levels. So base flow is  
 13 variable. Minimum desirable streamflow, some  
 14 streams have seasonal ones established, and  
 15 other streams have just a single minimum  
 16 desirable streamflow. But those are based upon  
 17 in-stream uses that need to be met that are  
 18 normally addressed by base flow. And so they're  
 19 a portion of base flow, MDS is a portion of base  
 20 flow developed by study, the State of Kansas  
 21 through the Kansas Geological Survey, Kansas  
 22 Water Office, and the Division of Water  
 23 Resources participating.  
 24 BY MS. WENDLING:  
 25 Q. And what are some of those in-stream uses?

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1 A. Well, some of those can be recreation, can be  
 2 water quality issues, can be -- much of it has  
 3 to do with the biota of the stream, the fishes  
 4 and -- and plants and things that are in the  
 5 stream and protecting their ability to exist.  
 6 Other in-stream uses may be appropriators on  
 7 that streams, surface water appropriators on  
 8 that stream.  
 9 Q. You mentioned that following the Compact there  
 10 was some legislative actions that were put in  
 11 place, was minimum desirable streamflow one of  
 12 those?  
 13 A. Minimum desirable streamflow, I think, was first  
 14 statutorily identified in about 1980, which was  
 15 prior to the filing of lawsuits in regards to  
 16 Compact. The quantification of what that issue  
 17 was, what minimum streamflow was came later and  
 18 was towards the late '90s where it came into  
 19 effect.  
 20 I think the lawsuits provided the impetus  
 21 to quantify the term, but minimum desirable  
 22 streamflow as it's statutorily been identified  
 23 from a state planning standpoint and identified  
 24 goal was first put in law in 1980. So one can  
 25 see that by '85, we were already identifying how

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1 groundwater affected streamflow to the Compact  
 2 basin, and I think that's where a lot of the  
 3 language for minimum desirable streamflow was  
 4 already groundwater usage.  
 5 Q. While you were at -- employed at DWR, were you  
 6 involved in any of the phases of the ASR  
 7 project?  
 8 A. No, I was -- I was not involved in ARS (sic).  
 9 Q. And what were you engaged to do as -- for this  
 10 hearing, what did I engage you to do?  
 11 A. Well, initially, you asked me to review the  
 12 model in detail, and at the time I thought that  
 13 I might rerun the model. However, I think I  
 14 had, like, 13 days to process and review things,  
 15 so after looking at the things identified in the  
 16 model, how they -- the approach that was used,  
 17 the values that were used, I didn't feel like I  
 18 could add anything regarding the appropriateness  
 19 or the use of the model by doing a modeling run.  
 20 So I -- in talking to you and receiving  
 21 instruction, I then reviewed reports associated  
 22 with the ARS, the modeling for the ARS, the  
 23 account models, and other -- other aspects that  
 24 were related to the Equus Beds and the Wichita  
 25 ARS.



1 Q. Now, looking at Intervenor's Exhibit 2, is this  
2 the report that you prepared?  
3 **A. Yes.**  
4 Q. Okay. In the latter half of this exhibit, is  
5 this your CV?  
6 **A. Yes.**  
7 Q. And did you prepare the CV?  
8 **A. Yes, I did.**  
9 Q. And do you know approximately when you prepared  
10 this?  
11 **A. I would say just prior to the December 2019**  
12 **hearing.**  
13 Q. And was this document accurate at the time you  
14 prepared it?  
15 **A. Yes.**  
16 Q. Have there been any major changes or additions  
17 to this document?  
18 **A. Well, the only change that I -- I say might be**  
19 **on memberships in connection with the Boy Scouts**  
20 **of America Jayhawk Area Council, I am no longer**  
21 **on the executive board as of February 2020.**  
22 Q. Would you like to briefly tell us about the  
23 publications and papers that you've referenced  
24 on page 2 of your CV?  
25 **A. The Kansas Disaster Report, FEMA Disaster Report**

1 **flows and releases from John Martin.**  
2 **The River Routing Model, Upper Arkansas**  
3 **River, Kansas, it's a report I prepared for the**  
4 **Frontier irrigation ditch, which is the furthest**  
5 **upstream Kansas irrigation ditch on the Arkansas**  
6 **River, basically at state line, and is**  
7 **essentially a continuation of the model used for**  
8 **the John Martin releases, to model the movement**  
9 **of those releases from state line down to Garden**  
10 **City and at each diversion point provide the**  
11 **predictive flow. At current, it's still subject**  
12 **to some investigation and -- and Division of**  
13 **Water Resources has it under advisement for**  
14 **their administration of water rights, but it's**  
15 **still an ongoing matter.**  
16 Q. All right. If you would find the -- there  
17 should be a black binder up there, it is  
18 Exhibit 1, in the black binder is the City's  
19 proposal. And I believe it's in section 4-ish,  
20 4-3 where they talk about the -- I think you had  
21 it. It's a thick --  
22 **A. I had it?**  
23 Q. Yeah.  
24 **A. Okay. Two black binders.**  
25 Q. Section 4.0 on page 4-1 of City's Exhibit 1 is

1 **1000, that report was in connection with the**  
2 **1993 flood. The most severe portion was in the**  
3 **Kansas River Basin, but there was -- there were**  
4 **also other parts of the state affected by that.**  
5 **I, in conjunction with FEMA officials, White**  
6 **House appointments, did a inspection and review**  
7 **of the conditions along the Missouri and Kansas**  
8 **Rivers in Kansas, prepared -- my portion of it**  
9 **was providing information as to levy failures,**  
10 **mostly agricultural levies in Kansas. It also**  
11 **included some municipal ones such as at Silver**  
12 **Lake, Kansas and up in Doniphan County, Kansas.**  
13 **So that was kind of the report that each state**  
14 **prepared as -- in conjunction with the 1993**  
15 **flood and -- and the basis for which certain**  
16 **funding was assigned to the various states.**  
17 **Appendix - excuse me, this mask is a little**  
18 **hard to see through - Appendix F.2 Agreement**  
19 **Concerning the Offset Account of John Martin,**  
20 **and it was part of the Fifth and Final Report of**  
21 **Arthur L. Littleworth, Special Master for U.S.**  
22 **Supreme Court in connection with the Kansas v.**  
23 **Colorado Original Number 105. This was the**  
24 **write-up of the model which I prepared in**  
25 **connection with the county for the state line**

1 where the City discusses the proposed ASR  
2 accounting methodology.  
3 **A. I'm not seeing that exhibit. Proposal cover**  
4 **letter and proposal?**  
5 Q. Yes.  
6 **A. Okay, thank you. And page?**  
7 Q. 4-1. Now, as part of your work and review, you  
8 spent a lot of time on the accounting  
9 methodology, and you had some concerns after  
10 reviewing the City's proposed accounting  
11 methodology. Can you walk us through what some  
12 of those concerns were?  
13 **A. Well, my -- my concerns on the accounting**  
14 **methodology was the switch from a model-driven**  
15 **accounting process looking at the various cells**  
16 **to something that was a, appeared to be a**  
17 **percentage loss or percentage effect methodology**  
18 **that when I compared it to the accounting models**  
19 **that had been run 2013, '14, '15, and '16, it**  
20 **appeared that those percentages were less than**  
21 **what seemed to be experienced in the previous**  
22 **modeling efforts, both from the standpoint of**  
23 **initial losses, through the recharge process,**  
24 **the diversion and recharge process, and also**  
25 **from the migration of recharge credits through**

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1 the cells and some cases lost to the streams, to  
 2 the river, Arkansas River. Well, they only --  
 3 they only showed losses to the Little Arkansas  
 4 River. The Arkansas River is normally a  
 5 recharge, and they don't show through their  
 6 accounting method any -- any losses to the  
 7 Arkansas River.

8 Q. On page 4-3, in the last paragraph of that page,  
 9 it says, loss rates of 5 percent initially and  
 10 3 percent annually are supported by the historic  
 11 accounting process modeling. Is it this  
 12 5 percent initial loss and 3 percent recurring  
 13 loss that you said you found to be less than  
 14 what was actually reflected in the accounting  
 15 report?

16 A. Well, when I was looking at it, it appeared to  
 17 me that in their tabulations and summary of  
 18 their tabulations that -- that the initial  
 19 losses were as much as 8 percent; in other  
 20 words, up to 8 percent of the water that was  
 21 diverted, and this was metered, and the amount  
 22 that was metered recharge, went back that was  
 23 used, that that seemed to be closer to 8 or  
 24 9 percent rather than 5 percent that initial  
 25 loss.

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1 And -- and then the 3 percent annually  
 2 seemed to be generally higher when you looked at  
 3 the beginning recharge value or what the  
 4 recharge credits existed, what the new recharge  
 5 was, how much was -- of the credits were  
 6 withdrawn through pumping, how much moved  
 7 between cells, and then how much was lost to the  
 8 river, it -- it appeared that cumulatively that  
 9 it was something more than 10 percent. So --  
 10 and that was based on each annual account --  
 11 (Reporter requests clarification  
 12 of the witness.)

13 A. -- each modeled accounting for the recharge  
 14 accounting.

15 So in looking at that, it appeared that the  
 16 numbers I was looking at, which were the numbers  
 17 provided by the reports by the City to Division  
 18 of Water Resources, did not support the  
 19 percentages that they were using in their  
 20 proposed accounting methodology.

21 BY MS. WENDLING:

22 Q. For the recurring losses, do you know what the  
 23 recurring loss is meant to represent?

24 A. Well, they're losses that occur on an annual  
 25 basis, and it's -- basically symbolizes the

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1 movement of recharge credits from one cell to  
 2 another and -- till you get to cells that the  
 3 loss is to the stream. And that loss affects  
 4 the -- the -- that loss -- that reoccurring loss  
 5 affects all the recharge that is -- credits that  
 6 are in that cell.

7 Q. And for the cells, index cells located along the  
 8 river, is that a loss of water downstream?

9 A. Yes, generally, the -- the slope or grade of the  
 10 groundwater surface elevation is downstream  
 11 towards the Little Arkansas River, at least from  
 12 the standpoint of the basin storage. So it  
 13 just -- in looking at that reoccurring loss and  
 14 then looking at the previous accounting, it  
 15 appeared to me like the annual loss was --  
 16 was -- to the stream was higher than what you  
 17 would get through the -- through the methodology  
 18 being proposed.

19 Q. So with the strategy of managing the aquifer  
 20 full, how does that impact losses from the  
 21 aquifer downstream?

22 A. Well, the last model, accounting model that I  
 23 reviewed was 2016, and so most of that change in  
 24 operation, I think, occurred prior to that or at  
 25 least the effects probably had not yet shown up.

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1 But generally speaking, if your groundwater  
 2 level goes up, it means more water is discharged  
 3 into the stream, and so if more water is now  
 4 being discharged to the stream, I think  
 5 physically you would have a higher recharge  
 6 credit going to the stream.

7 Q. And do you know where the 3 percent recurring  
 8 loss, what data that's based on? I'll refer you  
 9 to figure 15 of the proposal.

10 A. The 3 percent is the central --  
 11 (Reporter requests clarification  
 12 of the witness.)

13 A. -- central EBWF area, Equus Beds, and then you  
 14 have to help me with WF.

15 BY MS. WENDLING:

16 Q. Well field.

17 A. Well field, oh.

18 Q. All right. Shifting back to your expert report,  
 19 you referenced USGS 2103-5042 (sic), which is  
 20 also an exhibit to the City's proposal, and I  
 21 believe your comment was increasing recharge  
 22 either increases flow from the aquifer or  
 23 decreases flow from the rivers to the aquifer.  
 24 Why do you believe that is significant in the  
 25 concept -- in relation to the City's proposal?

1 **A. Well, because maintaining base flow is**  
2 **important. If you increase that base flow, then**  
3 **you've created a situation where there's more**  
4 **surface water available, that's potentially a**  
5 **positive, but then if -- if you go into drought**  
6 **operation, then if you have a tendency to pump**  
7 **much deeper than historically has occurred, then**  
8 **there's going to be much less base flow**  
9 **available, in other words groundwater discharge**  
10 **into the stream.**

11 Q. Okay.

12 **A. So -- so that can affect those in-stream uses**  
13 **that -- that you're wanting to try to protect.**  
14 **It's not saying that during a drought that**  
15 **streamflow won't go to zero, but it is saying**  
16 **that it can be an impact; sometimes it's a**  
17 **temporary impact, sometimes it can be a**  
18 **permanent impact. But if you look at the**  
19 **streams that currently have minimum desirable**  
20 **streamflow identified by the State of Kansas,**  
21 **you'll -- you'll note that many of those streams**  
22 **tend to be streams that are not heavily affected**  
23 **by groundwater pumping where we have significant**  
24 **groundwater level depletion. It is -- and part**  
25 **of that reason is that because of that earlier**

1 **have runoff or -- or have base flow. That's a**  
2 **gaining stream. And a losing stream is that the**  
3 **flow decreases as you go downstream.**

4 **And so if you look at the modeling, you**  
5 **will see that there is, I think it's -- for 2015**  
6 **you will see that there's about 4,000, maybe**  
7 **5,000 acre-feet being modeled as infiltrating**  
8 **from streamflow to groundwater, and where that**  
9 **happens is typically in a losing stream reach of**  
10 **the -- of the stream. And you'll see that**  
11 **there's, like, 38,000 acre-feet for that year**  
12 **being accounted for going into the Little**  
13 **Arkansas River, from groundwater to streamflow.**  
14 **And that would indicate that that -- where that**  
15 **occurs that that's a gaining stream.**

16 **And so as your groundwater levels go up and**  
17 **down, the reach of which you have either losing**  
18 **or gaining will vary, and the lower the**  
19 **groundwater level gets, the less gaining stream**  
20 **you have and the more losing stream you have.**  
21 **And so the higher the streamflow going to**  
22 **groundwater, infiltrating to groundwater will be**  
23 **and the less your flow from groundwater to**  
24 **stream will be. So --**

25 Q. So --

1 **pumping, before we recognized base flow**  
2 **potentials, base flow was removed through**  
3 **pumping. So -- so there was no MDS, for**  
4 **instance, to establish on some streams because**  
5 **they'd already gone past the point of being able**  
6 **to address or maintain a minimum desirable**  
7 **streamflow.**

8 Q. And am I understanding correctly that currently  
9 for the past accounting reports that you were  
10 able to look at for 2016 and previous does take  
11 into account and perform an accounting of the  
12 gain and loss from the streams to the aquifer?

13 **A. I'm sorry, I didn't understand your question.**

14 Q. Is it -- did I understand correctly that you  
15 believe the 2016 accounting report reflects the  
16 gain and loss from the Little Arkansas River  
17 into the aquifer and that it's a back-and-forth  
18 flow?

19 **A. Well, basically you would have to look at -- you**  
20 **would have to look at certain reaches for one**  
21 **thing, and then, secondly, you would -- you**  
22 **would need to decide whether or not the stream**  
23 **was gaining or losing. And a gaining stream**  
24 **basically is as you go down the stream, you have**  
25 **more and more flow, and this is true whether you**

1 **A. -- it's not an absolute switch --**

2 Q. Uh-huh.

3 **A. -- but it's a switch based upon what's occurring**  
4 **along the various river adjacent cells.**

5 Q. So in the full -- with a full aquifer state, the  
6 basin storage area is leaking more downstream  
7 than it would if the aquifer were at a lower  
8 state; is that correct?

9 **A. Yes, that's correct.**

10 Q. In your previous -- when you were talking about  
11 your previous experience, you said that a  
12 groundwater -- groundwater pumping can impair  
13 surface water rights; is that correct?

14 **A. Yes.**

15 Q. And do you know what's done when that happens?

16 **A. The groundwater right could be administered by**  
17 **the Division of Water Resources to limit how**  
18 **much they can withdraw, and potentially that**  
19 **area would be modeled to determine what that**  
20 **difference in operation would be.**

21 **On the Wet Walnut Creek, which is a major**  
22 **contribute to the Cheyenne Bottoms, many years**  
23 **ago the chief engineer established a intensive**  
24 **groundwater use area upstream from the Cheyenne**  
25 **Bottoms area, and certain limitations were**

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1 placed, reductions in groundwater pumping were  
 2 placed on -- on the groundwater users.  
 3 Primarily would have been to junior users but  
 4 because of the -- the process we went through  
 5 that they were able to voluntarily get some  
 6 reduction even -- even from folks that might  
 7 have been senior users with senior water rights.  
 8 Q. Do you believe that's a -- is that a similar  
 9 process if the impairment is to minimum  
 10 desirable streamflow versus another user's  
 11 surface water rights?  
 12 A. Recently, the Division of Water Resources, and  
 13 this is after my tenure there, but they did some  
 14 minimum desirable streamflow administration on  
 15 the Republican River, and this is just based on  
 16 newsletters so I don't have any actual knowledge  
 17 as to how they administered it or what -- what  
 18 that administration looks like, and I think a  
 19 very recent newsletter, Kansas Rural Water  
 20 Association Newsletter, they also are talking  
 21 about Rattlesnake Creek which is affecting a  
 22 federal water right.  
 23 Q. In reviewing the City of Wichita's proposal and  
 24 the proposed modifications, did you see any  
 25 consideration of whether the proposed

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1 modifications would impact minimum desirable  
 2 streamflow?  
 3 A. I didn't really see anything that addressed it.  
 4 I think that -- well, I'm pretty sure that the  
 5 Division of Water Resources, the chief engineer,  
 6 his orders indicate that MDS has to be taken  
 7 into consideration and -- and kind of standard  
 8 language in that regard, I think. But it -- I  
 9 don't see any part of the proposal that  
 10 necessarily addresses or -- or the modeling  
 11 initially addresses minimum desirable  
 12 streamflow.  
 13 One part of the chief's order, chief  
 14 engineer's order is related to the -- setting a  
 15 limit, which is above minimum desirable  
 16 streamflow, below which the City can't divert.  
 17 So, I mean, from that aspect, there is an  
 18 administrative address to that issue, but I  
 19 didn't really see where there was any modeling  
 20 that really addressed MDS impacts.  
 21 Q. In the Intervenor's exhibit book behind your  
 22 expert report and CV, under tab 3 -- it's the  
 23 thin white book, yes. And under tab 3 is a  
 24 document, can you tell me what this document is?  
 25 A. Yes, it -- it is -- it is a document that I

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1 basically tabulated work that was done by  
 2 members of the three agencies I mentioned  
 3 earlier, the Division of Water Resources, Kansas  
 4 Water Office, and the Kansas Geological Survey,  
 5 that were retrospectively looking at MDS  
 6 achievement based on ten-year increments.  
 7 So, for instance, the first one -- the  
 8 first part of the table says 1969 to 1978, that  
 9 was the decade that they looked at achieving  
 10 minimum desirable streamflow, and they achieved  
 11 it 98.3 percent of the time. In other words,  
 12 almost -- over 98 percent of the time there was  
 13 more streamflow than minimum desirable  
 14 streamflow. Or the other way to look at it,  
 15 1.7 percent of the time it fell below MDS. And  
 16 this was on the Little Ark River and at the  
 17 Valley Center gage. And so if you look at the  
 18 asterisks, the single asterisk, those are ones  
 19 that were -- decades that were done in the  
 20 retrospective study; I'll call it the Young  
 21 study since Young is the first person named on  
 22 it, first author name.  
 23 Q. Will you turn to tab 4 and tell me what that is?  
 24 A. That's the -- the study which I was -- or  
 25 write-up of the study that I was referring to.

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1 Q. So if the data with the asterisks are taken from  
 2 that report, can you tell us what the other  
 3 columns where that data is from?  
 4 A. Well, 1999 to 2008 was not in that report  
 5 because of the gap and because of the time that  
 6 it was issued. The ones with the upward arrow,  
 7 or caret, the 2009 to 2018 was an update that I  
 8 did, the computation along the lines, and you  
 9 will note that for that decade it was 83.8  
 10 percent achieved; and if you go back to the '89  
 11 to '98, that was 89.6, so at least for this  
 12 data, it -- it shows a decline.  
 13 And then the final one was just looking at  
 14 the model, the drought years that the model uses  
 15 four times, the drought model, it shows that  
 16 achievement is 63.4 percent. And -- and so  
 17 while that is -- like I said, normally, they --  
 18 they look at -- at least retrospectively the  
 19 State has looked at it from the standpoint of  
 20 decades. I looked at that piece of the 2009 to  
 21 2018 decade that's represented by those two  
 22 drought years, just to see what impact it had  
 23 within that -- that time frame, and so there  
 24 was -- and that's based on the streamflows that  
 25 were gaged at Valley Center on the Little Ark

1 **River.**  
 2 Q. Now, I believe you and Mr. Romero had a  
 3 discussion of the drought year achievement and  
 4 had some different figures or something was a  
 5 little bit different between your analysis?  
 6 A. Yes. Dave Romero in doing his modeling, looking  
 7 at -- at the drought, came up with about 10 cfs  
 8 of streamflow decline that he had modeled from  
 9 the standpoint of pumping and all those -- and  
 10 that effect. And he indicated that about -- he  
 11 felt that about 5 percent would be -- or about  
 12 one-half, or 5 cfs, he would assign to the  
 13 Little Ark River.  
 14 As I mentioned in the accounting models,  
 15 they don't -- those models don't show any  
 16 discharge to the Ark River, so this deficit is  
 17 really the reduction of discharge to the river.  
 18 So I would have thought the 10 was wholly going  
 19 on the Little Ark, but as a modeler and knowing  
 20 the limitations of his model, he felt that  
 21 50 percent of that 10, or 5 cfs, was an  
 22 appropriate level of -- of assignment to that.  
 23 And so, yeah, that's what he did.  
 24 Q. All right.  
 25 A. And he -- okay.

1 Q. Did you have anything further to add, I didn't  
 2 want to interrupt you?  
 3 A. Well, in looking at that draft model and -- and  
 4 finding an additional 5 cfs of flow occurring,  
 5 you would probably find the 63.4 percent to be  
 6 lower. How much lower, maybe 5 or 10 percent  
 7 lower, but at least from the predictive sense of  
 8 that drought model, it would -- it would  
 9 indicate compliance would be -- or achievement  
 10 of minimum desirable streamflow would be lower  
 11 than what the actual streamflow showed.  
 12 Q. All right. Will you also turn to what is tab 25  
 13 in the Intervenor's binder, which is, as you  
 14 were very kindly and patiently explaining MDS to  
 15 me prior to this and your figures regarding past  
 16 streamflow, will you tell us what this -- the  
 17 graph is on -- under tab 25?  
 18 A. Your tab?  
 19 Q. 20 -- 25.  
 20 A. 25, okay.  
 21 Q. Be almost the last one.  
 22 A. Oh. I was looking at 5, I'm sorry. That graph  
 23 is --  
 24 MR. STUCKY: Hold on, can you hold  
 25 up the exhibit, we want to make sure we

1 have the right one?  
 2 A. -- of flows at Valley Center for the drought  
 3 model and for the 1930's -- the historical  
 4 1930's drought, which was considered the  
 5 100-year drought history. The orange line is  
 6 the 1930's graph, and all this is is a graph --  
 7 graphic of what the gage readings were at that  
 8 time. And the blue is the actual streamflows  
 9 for the 2011 and 2012, repeated four times to  
 10 look at the model.  
 11 And in addition, I put a 20 cfs line, which  
 12 is the MDS standard on there, and so that  
 13 graphically you can look at and -- and see how  
 14 often flows are above or below MDS, which is  
 15 kind of a -- a visual of that achievement level.  
 16 It's also representative, if you look, you  
 17 notice the 2007 and '12 tend to be much lower  
 18 than the 1930's streamflows, and I think one  
 19 could probably say that the '30s were a  
 20 pre-irrigation streamflow, and obviously 2011  
 21 and '12 were a irrigation and municipal use or a  
 22 groundwater pumping scenario and so they had a  
 23 greater impact on -- or that impact on  
 24 streamflows is represented by the lower levels,  
 25 the less achievement of MDS. So this is just a

1 graphical representation of the actual  
 2 streamflows.  
 3 Now, I will mention that the -- the date  
 4 axis, the horizontal axis is -- is really on  
 5 just time, but they're not the exact dates  
 6 because 2011 and 2012 were repeated four times,  
 7 but I could find no way of cleaning that up,  
 8 that date up. And also the -- so those are both  
 9 eight-year graphs, but they're not necessarily  
 10 representative of the dates listed on that axis.  
 11 It's more for reference that you know which year  
 12 is -- or that you know that a year is occurring,  
 13 it occurs during that year.  
 14 BY MS. WENDLING:  
 15 Q. And as we consider the proposed modifications,  
 16 modeling a drought based on 2011 and 2012, do  
 17 you believe the actual MDS achievement in 2011  
 18 and 2012 is an important consideration?  
 19 A. I think -- I think it's an indicator of the  
 20 importance of MDS achievement. As you saw  
 21 through the decade of 2009 to 2018 in my table,  
 22 the dec -- the decade of -- of the MDS  
 23 achievement wasn't tremendously different than  
 24 what had proceeded it. So it was --  
 25 (Reporter requests clarification)

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1 of the witness.)  
 2 **A. -- it was smaller than the next smallest one of**  
 3 **achievement rates. But it would -- if you had**  
 4 **an eight-year drought instead of a two-year**  
 5 **drought, it clearly would be even more**  
 6 **impactful. However, those -- I didn't have that**  
 7 **information. If you look at Dave Romero's**  
 8 **report and his graphics, you would probably add**  
 9 **additional -- or subtract more flow from -- from**  
 10 **each preceding year from the -- from the actual**  
 11 **streamflow or gage streamflow. I did not do**  
 12 **that, I just repeated it four times, the same**  
 13 **streamflow.**  
 14 **MS. WENDLING:** I would like to admit  
 15 Exhibit -- Intervenors' Exhibit Number 2,  
 16 which is Mr. Austin's expert report and CV.  
 17 **PRESIDING OFFICER:** Are there any  
 18 objections to Exhibit 2? Okay. Hearing  
 19 none, Exhibit 2 will be admitted.  
 20 **MS. WENDLING:** I would also like to  
 21 admit Intervenors' Exhibit 3, which is the  
 22 percent of achievement of MDS chart?  
 23 **PRESIDING OFFICER:** Any objections  
 24 to Exhibit 3? Is someone speaking?  
 25 **THE REPORTER:** Brian is.

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1 **MR. MCLEOD:** I'm sorry, I just  
 2 reiterate for the record the objection that  
 3 was already raised previously by the City  
 4 because the document was not produced in  
 5 discovery or with the original expert  
 6 disclosure.  
 7 **PRESIDING OFFICER:** Okay. That's  
 8 noted. Exhibit 3 will be admitted.  
 9 **MS. WENDLING:** And, finally, I'd  
 10 like to admit Exhibit 4, which is the Young  
 11 article.  
 12 **PRESIDING OFFICER:** I'm sorry, I did  
 13 not hear what you just said?  
 14 **MS. WENDLING:** I'd like to admit  
 15 Intervenors' Exhibit 4 --  
 16 **PRESIDING OFFICER:** 4.  
 17 **MS. WENDLING:** -- which is the Young  
 18 article we also spoke about earlier.  
 19 **PRESIDING OFFICER:** Objections to  
 20 Exhibit 4?  
 21 **MR. MCLEOD:** Reiterating for the  
 22 City the same objection previously made,  
 23 the article wasn't -- was not produced in  
 24 discovery.  
 25 **PRESIDING OFFICER:** And for the same

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1 reasons that I cited earlier, that  
 2 objection will be overruled, Exhibit 4 will  
 3 be admitted.  
 4 **MS. WENDLING:** And I have no further  
 5 questions at this point.  
 6 **PRESIDING OFFICER:** Okay. This  
 7 might be a good time to take about a  
 8 ten-minute break, so we're going to go off  
 9 the record and we will be back on in about  
 10 ten minutes. Thank you.  
 11 (Thereupon, a recess was taken;  
 12 whereupon, the following was had.)  
 13 **PRESIDING OFFICER:** Okay. We're now  
 14 back on the record after a short break, and  
 15 I believe at this point we move to  
 16 cross-examination of George Austin,  
 17 Mr. McLeod.  
 18 **MR. MCLEOD:** Thank you.  
 19  
 20 **CROSS-EXAMINATION**  
 21 **BY MR. MCLEOD:**  
 22 Q. Good morning, Mr. Austin. Looking at your  
 23 expert report, page 1 under the heading  
 24 background, you said, the main purpose of my  
 25 examination would be to review any aspects of

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1 the input and output data of the models used to  
 2 simulate the effects of the groundwater pumping  
 3 and recharge elements and account for the City  
 4 of Wichita's administration of the Equus Beds  
 5 Aquifer Storage and Recovery Project, ASR. Is  
 6 reviewing aspects of the input and output data  
 7 of the models, is that a fair statement of what  
 8 you did in your work?  
 9 **A. In -- in looking at the groundwater model, yes.**  
 10 Q. Did you do any actual modeling of pumping  
 11 scenarios?  
 12 **A. Of the -- the -- in connection with the -- the**  
 13 **development of the groundwater model, accounting**  
 14 **models, I did not look at that, the pumping**  
 15 **aspects of that.**  
 16 Q. On the first page of your report under the  
 17 heading Procedure, you say, excerpts from the  
 18 various publications were excerpted regarding  
 19 the various concerns. This suggests that your  
 20 review procedure may have been limited to  
 21 excerpting excerpts of documents that you  
 22 identified in your report; is that correct?  
 23 **A. My -- I did have data files, but I did not**  
 24 **include those in any comments regarding that**  
 25 **data as I found it to be sufficient and adequate**

1 **and reasonable, so the remainder of my report**  
2 **was more of a document review of the reports**  
3 **made by the City's, their experts and other**  
4 **experts involved in this.**

5 Q. So to the extent that you looked at the data  
6 sets, you concluded that the data sets used in  
7 the modeling were reasonable?

8 **A. Yes.**

9 Q. In looking at the reports that you analyzed, did  
10 you begin with whole documents, or did you begin  
11 only with excerpts of documents that  
12 Ms. Wendling had furnished to you from which you  
13 selected more limited excerpts for your report?

14 **A. I -- I reviewed the whole documents. These**  
15 **documents, as indicated in the last page, were**  
16 **housed on the Division of Water Resources'**  
17 **website concerning the City of Wichita ARS**  
18 **project.**

19 Q. On the first page of your report, under the  
20 heading Model Data Files, you say, originally it  
21 was believed comparison the data sets used in  
22 different model runs would be of value. Who  
23 believed that, Mr. Austin?

24 **A. Initially, that was what I felt was a reasonable**  
25 **thing to look at.**

1 **about that.**

2 Q. Okay. Backing up, after review of the data  
3 sets, it was determined that further comparisons  
4 would be better served based on the reported  
5 results in the various report, and then  
6 referring to the various reports, are -- are you  
7 talking about the reports that are identified  
8 under your heading Review of Reports which spans  
9 portions of pages 1 through 4 of your expert  
10 report?

11 **A. I looked at more reports than I referenced in**  
12 **the -- in my report. I only reported on items**  
13 **that I found within those reports that raised a**  
14 **concern with me, and I did not report in general**  
15 **on all reports that were available to me or --**  
16 **and had a review.**

17 Q. Do you remember what other reports you looked  
18 at?

19 **A. I have a notebook that I recorded those in, but**  
20 **I don't have a specific memory of each -- each**  
21 **one that I looked at.**

22 Q. How many groundwater models have you personally  
23 built?

24 **A. I have built two. One was with MODFLOW, the**  
25 **other was a simplified model because it didn't**

1 Q. And then you say, after review of the data sets,  
2 it was determined that further comparisons would  
3 be better served based on the reported results  
4 in the various reports. Who made that  
5 determination?

6 **A. That was my determination.**

7 Q. What was the extent of your actual comparison of  
8 the data sets used in the modeling? Inputs and  
9 outputs?

10 **A. My -- the extent of my review of those were to**  
11 **look at the values, for instance, the various**  
12 **aquifer characteristics and things that were**  
13 **used in the model to address the transport of**  
14 **water, the pumping effects, and that sort of**  
15 **thing. And what I found was those inputs were**  
16 **of a reasonable nature, they were calibrated by**  
17 **the USGS through their modeling effort and their**  
18 **report of 2013-5042, and so I didn't feel like**  
19 **further exploration of that data was required.**

20 Q. And then the reports that you went on to review,  
21 those would be the reports that are identified  
22 in your Review of Reports section spanning  
23 portions of pages 1 through 4 of your report,  
24 correct?

25 **A. I'm not sure I understand your question, sorry**

1 **require the complexity of MODFLOW.**

2 Q. Please explain what a MODFLOW model is and how  
3 it works.

4 **A. MODFLOW model is a groundwater model which**  
5 **originally was set up, was built to look at**  
6 **groundwater contamination transport, but it was**  
7 **also found to be applicable to groundwater**  
8 **pumping effects and their impacts based on**  
9 **certain boundary conditions. It -- it, in**  
10 **simplified terms, is a model that looks at**  
11 **inflows, subtracts outflows, and comes with --**  
12 **up with a change in storage, whether positive or**  
13 **negative, which is related to how water,**  
14 **groundwater moves through the aquifers and the**  
15 **characteristics of that aquifer, which are**  
16 **generally produced in a -- through a calibration**  
17 **process where those factors are -- are -- are**  
18 **looked at, results are compared to actual data,**  
19 **and then modifications or calibration is made to**  
20 **help fit that data to a reasonable and**  
21 **acceptable level.**

22 Q. Are you familiar with an MMW-2 package that is  
23 sometimes used with MODFLOW models?

24 **A. I am not.**

25 Q. Did you notice in -- in reviewing the model that

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1 had been run for the City's proposal in this  
 2 case whether that model had utilized the  
 3 streamflow package or the river package?  
 4 **A. I don't know that.**  
 5 Q. Are you familiar with the concept of  
 6 conductance?  
 7 **A. Yes.**  
 8 Q. And can you explain to us what is conductance?  
 9 **A. Conduct -- conductance is a principle of how**  
 10 **water travels or transports through the aquifer**  
 11 **as defined by its physical characteristics.**  
 12 Q. Are you familiar with the streamflow package and  
 13 the river package that are sometimes used with  
 14 the MODFLOW model?  
 15 **A. I have used it, but as I stated earlier, it was**  
 16 **only used once. So -- and that was sometime**  
 17 **ago, so I can't say that I'm currently familiar**  
 18 **with it.**  
 19 Q. And would it follow equally that -- that you  
 20 wouldn't be familiar with any differences  
 21 between how the streamflow package or the river  
 22 package would work in the model?  
 23 **A. I don't know the answer to that question.**  
 24 Q. How does riverbed conductance work as a factor  
 25 for determining head within the MODFLOW code?

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1 **A. Well, certainly the riverbed -- riverbed head is**  
 2 **part of the process that pushes water either in**  
 3 **or receives water out of the aquifer, depending**  
 4 **on that head relative to the groundwater head.**  
 5 **And the conductance is due to how fine or how**  
 6 **coarse materials are and -- and the makeup of**  
 7 **that -- that material and how it transfers**  
 8 **the -- or transports the water through the**  
 9 **groundwater.**  
 10 Q. And so information concerning that material has  
 11 to have been put into the model for the model to  
 12 run correctly?  
 13 **A. It would -- since the river is a boundary on the**  
 14 **model, certain values would have to be put into**  
 15 **the model to -- to operate that boundary**  
 16 **properly. It -- and it is generally a, once**  
 17 **again, a calibrated effect that is looking at**  
 18 **what actually occurs and how the stream behaves**  
 19 **and how the ground -- groundwater adjacent to**  
 20 **the stream behaves.**  
 21 Q. Can you explain how heads are calculated and  
 22 assigned to the river within the model?  
 23 **A. The heads generally assigned in rivers are**  
 24 **assigned based upon the depth of flow, which is**  
 25 **usually a gage flow, but because gages aren't at**

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1 **every point along the river, some interpolation**  
 2 **or -- or -- well, I would say some interpolation**  
 3 **is generally required to review the amount of**  
 4 **flow, the cross section of the stream, and the**  
 5 **depth of which it would flow at any point along**  
 6 **that stream.**  
 7 Q. What is the time step of the model?  
 8 **A. The time step as I was looking at it appeared to**  
 9 **be on an annual basis.**  
 10 Q. How many ASR accounting reports have you  
 11 assembled for clients?  
 12 **A. ASR accounting reports, did you say? Could you**  
 13 **repeat the question, please.**  
 14 Q. Yes, how many ASR accounting reports have you  
 15 assembled for clients?  
 16 **A. None.**  
 17 Q. Would it be true that -- that all the accounting  
 18 work that you have done has been with respect to  
 19 less complex systems than the Equus Beds  
 20 Aquifer?  
 21 **MR. STUCKY: I'm -- I'm going to**  
 22 **object to the form of the question, less**  
 23 **complex than what?**  
 24 **BY MR. MCLEOD:**  
 25 Q. Than the Equus Beds Aquifer?

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1 **A. The accounting forms they have done as far as to**  
 2 **surface water have as part of the criteria are**  
 3 **losses or gains based upon groundwater models.**  
 4 **Those, however, were not independently done**  
 5 **through the accounting model. So the accounting**  
 6 **models I have done are taking in account surface**  
 7 **water transport and their ability, so they are**  
 8 **not the same as the groundwater accounting**  
 9 **method.**  
 10 Q. Can you tell us, Mr. Austin, how the MODFLOW  
 11 model that's currently used to assemble the ASR  
 12 annual accounting reports that document the  
 13 physical recharge credit?  
 14 **A. Well, as I stated in my report, I did not**  
 15 **evaluate the models individually, I looked at**  
 16 **the output from the models, so I can't explain**  
 17 **how the ASR accounting models or how MODFLOW**  
 18 **operates within that.**  
 19 Q. And in your evaluation of the Burns & McDonnell  
 20 proposed AMC accounting numbers, you didn't run  
 21 the MODFLOW model, did you?  
 22 **A. No, I was looking at the outputs of the reports**  
 23 **that were --**  
 24 **(Reporter requests clarification**  
 25 **of the witness.)**



1 **A. -- of the reports that were provided, or I had**  
2 **access to.**

3 **BY MR. MCLEOD:**

4 Q. So, Mr. Austin, I think you've already indicated  
5 that -- that you reviewed the data sets used in  
6 the model, you concluded that the data sets were  
7 appropriately used in the model, you didn't have  
8 criticisms of the data sets, you didn't run the  
9 model to check Burns & McDonnell's numbers on  
10 the AMC credits, how can you have a basis to  
11 assert that the numbers that they reached are  
12 wrong?

13 **A. I did not assert that the accounting model and**  
14 **the output from them were in error. In fact, I**  
15 **used those as the basis for me to look at the**  
16 **proposed accounting methodology, the non-model**  
17 **methodology to express some concern about the**  
18 **values being used in that accounting process,**  
19 **that proposed accounting process.**

20 Q. In the work that you did with respect to the Ark  
21 River Compact models, did you personally create  
22 or develop the models that were used during the  
23 Compact development?

24 **A. The Compact was signed by the two states, Kansas**  
25 **and Colorado, back in the 1940s, so there was no**

1 **it was through negotiation, in some cases**  
2 **compromise, to get a model that was acceptable**  
3 **to both parties. Inasmuch as it produced a**  
4 **settlement and completed the litigation, it**  
5 **definitely was a useful tool.**

6 Q. And you had mentioned during your direct  
7 testimony, Mr. Austin, that there were some  
8 modifications to the model that were negotiated.  
9 Do you recall what those modifications were?

10 **A. Well, in connection with the river model, which**  
11 **is the accounting model for the state line**  
12 **flows, the main changes were that a factor of**  
13 **channel loss, or transit loss as I call it, was**  
14 **added. This was based upon a scientific report,**  
15 **I think it was USGS, in Colorado that for the**  
16 **reach of the river from John Martin state line**  
17 **had calculated some factors as to what that**  
18 **transit loss would look like.**

19 **So the model which I had had kind of a --**  
20 **had a built-in channel and bank storage factor,**  
21 **but it did not include losses such as**  
22 **evaporation and transpiration and -- and those**  
23 **sorts of things. And so by using the model --**  
24 **or the study that the USGS had developed on that**  
25 **reach and inputting -- creating that as a**

1 **model developed on the Compact. With the**  
2 **litigation which began in 1985, outside**  
3 **consultants worked on models for both Kansas and**  
4 **Colorado, and part of the litigation ended up**  
5 **that the states were headed in parallel**  
6 **directions and that the Kansas consultant**  
7 **developed model, the HIM, was the one that was**  
8 **chosen to represent the Compact conditions that**  
9 **were in existence at that point in time.**

10 **And, of course, this litigation went from**  
11 **1985 to 2009 when the Supreme Court finally**  
12 **ruled on it. So I had no input or relationship**  
13 **with the origination of that model. I came in**  
14 **at a later time frame in 2000 and began to work**  
15 **with the interstate team in connection with what**  
16 **was already a developed model.**

17 Q. And during that work, did you think -- we're  
18 getting a lot of feedback, I'm not sure from  
19 where. During the work on the Ark River  
20 Compact, Mr. Austin, when you were working with  
21 DWR, do you think that models were a useful tool  
22 for the chief engineer for solving the issues in  
23 that project?

24 **A. Models was really the only tool that could**  
25 **settle the issues that the two states had, and**

1 **function within my model, it produced a result**  
2 **that was compatible with the viewpoints of both**  
3 **Colorado and Kansas.**

4 Q. As modifications were discussed between the  
5 parties, did you agree that they were  
6 appropriate modifications to make?

7 **A. I'm sorry, I did not hear you.**

8 Q. There was feedback, I'll try again. The  
9 question, Mr. Austin, was after the parties  
10 discussed those issues with the model, did you  
11 agree that the modifications that were made were  
12 appropriate?

13 **PRESIDING OFFICER:** Brian, I'm  
14 sorry, I'm going to jump in here, there's  
15 some technical adjustments being made on  
16 this end and the previous questions you  
17 asked did not get heard, so if you'll give  
18 us a moment, please.

19 (Discussion held off the record.)

20 **PRESIDING OFFICER:** Okay. Thank  
21 you, everyone, for your patience, we're  
22 back on the record, and, Mr. McLeod, I  
23 think you need to go back two questions.

24 **BY MR. MCLEOD:**

25 Q. Okay. For -- for an attempt at continuity, I

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1 think we were -- Mr. Austin had described some  
 2 modifications that were made to the model on --  
 3 on the project when he was working on the  
 4 dispute between Kansas and Colorado, and my --  
 5 my question for him was after the parties had --  
 6 had discussed those modifications, did he agree  
 7 that the modifications were appropriate  
 8 modifications to the model?  
 9 **A. The modifications were a change that improved**  
 10 **the model in its performance. It also provided**  
 11 **a, I'll call it an error margin that was**  
 12 **acceptable to both states since streamflow data**  
 13 **that we were using had a plus or minus error**  
 14 **potential. So it incorporated things that were**  
 15 **physically appropriate and -- and now totally**  
 16 **acceptable, in fact, some of that was suggested**  
 17 **by myself. So it -- in a negotiation, you don't**  
 18 **always get 100 percent of what you want, and**  
 19 **neither does the other party, so it was an**  
 20 **appropriate compromise and effective and**  
 21 **accurate from my perspective.**  
 22 Q. Thank you. Going back to your expert report on  
 23 page 1, under the heading U.S. Geological Survey  
 24 Scientific Investigation Report 2013-5042, that  
 25 is one of the documents that you found to -- to

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1 raise concerns to the point that you took some  
 2 excerpts from it, correct?  
 3 **A. That I -- that I commented on and -- and**  
 4 **excerpted it, yes.**  
 5 Q. And your report reflects that this is a report  
 6 on the MODFLOW model itself, correct?  
 7 **A. I was quoting what in that report they said were**  
 8 **the limitations as to the MODFLOW -- MODFLOW**  
 9 **model and the assumptions that they had made,**  
 10 **particularly in terms of cell size and -- yeah,**  
 11 **in -- in cell size or grid size.**  
 12 Q. And dating from 2013, this is not a report that  
 13 was derived from the simulations modeled by  
 14 Burns & McDonnell in support of the proposal,  
 15 was it?  
 16 **A. Could you repeat that question?**  
 17 Q. Yes. Dating from 2013, this report is not a  
 18 report that's derived from the simulations  
 19 modeled by Burns & McDonnell in support of the  
 20 City's proposal, is it?  
 21 **A. It is the USGS model which was the basis for**  
 22 **Burns & McDonnell building upon it.**  
 23 Q. Do you know if there were differences in the  
 24 data sets between the -- the simulation that was  
 25 the subject of this 2013 report and the data

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1 sets used in the simulations modeled by Burns &  
 2 McDonnell in support of the City's proposal?  
 3 **A. I did not see any major differences in those**  
 4 **data sets. Now, if there were data that was**  
 5 **different or refined, I could have missed some**  
 6 **of that, but in general I felt like they were**  
 7 **consistent with each other.**  
 8 Q. And, Mr. Austin, I'll -- I'll ask you as an  
 9 aside, you've been present for a lot of the  
 10 hearings prior to today, haven't you?  
 11 **A. I think I've been present for about 60 percent**  
 12 **of the hearings.**  
 13 Q. You were present the day that Mr. Romero  
 14 testified about the modeling results of Balleau  
 15 Groundwater, Inc., weren't you?  
 16 **A. Excuse me. Yes, I was.**  
 17 Q. And did -- did Mr. Romero indicate in his  
 18 testimony that Balleau Groundwater had also used  
 19 the MODFLOW model for their work?  
 20 **A. I believe so.**  
 21 Q. Looking at your conclusions from the U.S.  
 22 Geological Survey Scientific Investigation  
 23 Report 2013-5042, you note that the groundwater  
 24 flow model was discretized using a grid with  
 25 cells measuring 400 feet by 400 feet. Model

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1 results were evaluated on a relatively large  
 2 scale and cannot be used for detailed analyses  
 3 such as simulating water level drawdown near a  
 4 single well. And that's a quote from -- from  
 5 the U.S. Geological Survey Scientific  
 6 Investigation Report, isn't it?  
 7 **A. It is.**  
 8 Q. Can model results be used for simulating impacts  
 9 on water levels in a 400-foot-by-400-foot cell  
 10 and thereby water levels in a well site within  
 11 that cell?  
 12 **A. The -- the water level can be determined**  
 13 **according to that, depending on the data in**  
 14 **which they're trying to affect. I would point**  
 15 **out that impairments of individual wells**  
 16 **oftentimes is at the time of greatest --**  
 17 **greatest pumping, and those levels, groundwater**  
 18 **levels are not represented in the model. The**  
 19 **model generally is reflecting a -- with static**  
 20 **water level, which is after recovery from the**  
 21 **pumping. So any specific impact on an adjacent**  
 22 **well might be understated by -- by the model**  
 23 **and, in fact, may be misleading as to what the**  
 24 **impact is during the maximum pumping time rather**  
 25 **than -- during the maximum pumping.**

1 Q. Wasn't a major point of the Balleau Groundwater  
2 modeling to simulate impacts at individual wells  
3 in order to determine whether any might be  
4 impacted by pumping to the proposed lower index  
5 line?

6 **A. He did state that.**

7 Q. Do you think Mr. Romero was wrong about  
8 Balleau's ability to simulate those impacts with  
9 the MODFLOW model?

10 **A. I believe that he was looking at the model and**  
11 **the change in groundwater level, that is a**  
12 **static groundwater level, as an indicator of**  
13 **what the impact is. I don't think that his**  
14 **levels necessarily reflect the actual potential**  
15 **for impairment. It only reflects the potential**  
16 **for impairment.**

17 Q. In your report, you also refer to the model  
18 cells used by Spinazola and others for stress  
19 period from 1935 through 1979 being a mile on  
20 each side, with pumping assigned to the center  
21 of each cell. Do you mean to imply by that  
22 observation that the 400-foot-by-400-foot grid  
23 of the current model is somehow limited in  
24 resolution because of Spinazola's use of the  
25 1935 to 1979 pumping data discussed in the 2013

1 **that does not limit the applicability of the**  
2 **data used later and the locations used later**  
3 **within a 400-foot grid. But all I'm saying is I**  
4 **think the model is looking at a different thing,**  
5 **a potential of impairment based on a change in**  
6 **storage or the change in groundwater level and**  
7 **not the impact of active pumping at its peak**  
8 **pumping -- pumping time for a short period of**  
9 **time that may have a much greater impact. So**  
10 **it's not -- it's not a complaint about the model**  
11 **or what the model shows; it's just that I**  
12 **believe it's showing the wrong thing.**

13 Q. Going to page 2 of your report where you  
14 reference USGS Scientific Investigation Report  
15 2010-5023 pertaining to water quality in the  
16 Equus Beds Aquifer and Little Arkansas River  
17 before implementation of large-scale artificial  
18 recharge, south central Kansas, that report  
19 relates to the time period 1995 to 2005,  
20 correct?

21 **A. Yes.**

22 Q. And you cite some language from the page 1 study  
23 abstract of that report, did you review the  
24 study beyond the language that was in the page 1  
25 study abstract?

1 USGS report?

2 **A. It would be affected only if you were going back**  
3 **and calibrating or modeling to that information.**  
4 **I don't believe that's what's done in the**  
5 **current models done by Burns & McDonnell.**

6 Q. Okay. And that's actually my next question, you  
7 weren't under the impression that any of the  
8 forward scenarios modeled for ASR used any  
9 boundary conditions or packages, including  
10 pumping or stress period information from 1935  
11 to 1979, were you?

12 **A. No, I only believed that they were using a**  
13 **calibrated model that did use that information.**

14 Q. If in the period's model by Burns & McDonnell,  
15 and for that matter Balleau Groundwater, the  
16 MODFLOW model uses pumping values with the  
17 Universal Transverse Mercator coordinates  
18 reported by DWR for the represented well  
19 locations, how would Spinazola's use of one-mile  
20 cells and centralized pumping assumptions for  
21 the 1935 to 1979 period in any way limit the  
22 resolution of the later simulations that are not  
23 one-mile cells and not using the 1935 to 1979  
24 pumping data?

25 **A. The -- the calibration used that information;**

1 **A. Yes, I did. The abstract language was only**  
2 **adopted in -- inasmuch as it, I guess I would**  
3 **say, summarized or highlighted the issue that I**  
4 **was looking at.**

5 Q. Following your citation of the language from the  
6 study abstract, you conclude, the rise of  
7 groundwater elevations in the basin storage area  
8 would lessen the hydraulic gradient and,  
9 therefore, movement of the chloride would be  
10 slowed. Can you explain why that is?

11 **A. Essentially it would change the slope, the -- of**  
12 **the groundwater level, and if you raise it**  
13 **enough, it would reverse the direction of**  
14 **general groundwater flow. So that's, I think,**  
15 **what I was trying to report there.**

16 **I would also note that saltwater is a**  
17 **greater density than fresh water, so the**  
18 **consequence is that it may be less affected by**  
19 **changes in groundwater level than -- than fresh**  
20 **water is, but nonetheless the hydraulic gradient**  
21 **would tend to be, from its aspect, negative to**  
22 **that flow and, therefore, would retard or slow**  
23 **the -- the groundwater flow, including the**  
24 **saltwater.**

25 Q. To the extent that the aquifer were maintained

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1 at predevelopment water levels or near  
 2 predevelopment water levels, very full, would  
 3 you expect that to slow chloride migration more  
 4 than a scenario where levels were drawn down to  
 5 lower levels such as 1998 water levels?  
 6 **A. I think the difference would be how those**  
 7 **processes would affect the groundwater gradient.**  
 8 **If the aquifer were raised uniformly or without,**  
 9 **you know, specific areas, it would no longer be**  
 10 **a barrier necessarily to the saltwater, even if**  
 11 **it's flattened the gradient and slowed it. But**  
 12 **if -- but if you draw down, then certainly you**  
 13 **can steepen the barrier but once -- or steepen**  
 14 **the gradient, and if you pump it down enough,**  
 15 **you can remove any groundwater barrier that**  
 16 **there might be by the higher heads, which, I**  
 17 **think, by recharge wells and other means can be**  
 18 **maintained.**  
 19 Q. You note that the studies, studies plural as is  
 20 expressed in your report, do not address the  
 21 lowering of the index elevation the 1993 levels  
 22 which were historic lows. Are you referring  
 23 there to the USGS Scientific Investigation  
 24 Report 2010-5023, or were there other studies as  
 25 well that you felt did not address that?

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1 **A. I guess I'm not seeing that particular language.**  
 2 Q. If you look at the bottom of the second page  
 3 after the cover page, under the heading ASR  
 4 Permit Modification Proposal Revised Minimum  
 5 Index Levels & Aquifer Maintenance Credits by  
 6 Burns & McDonnell.  
 7 **A. I see that now, and I see the language. As far**  
 8 **as this study, I presume I -- let me look real**  
 9 **quick. I'm certainly referring in part to**  
 10 **Report 2010-5023. I do not know what other**  
 11 **studies I'm referring to in that sentence unless**  
 12 **I report or mention those later in the -- in the**  
 13 **report.**  
 14 Q. Did you review or consider USGS Report  
 15 2014-1162, Simulation of Chloride Transport 1990  
 16 through 2008?  
 17 **A. I don't know without referring to the notes I**  
 18 **previously mentioned, which I do not have with**  
 19 **me on the witness stand.**  
 20 Q. Do you know if that was one of the documents  
 21 that Ms. Wendling would have provided to you?  
 22 **A. Generally speaking, the documents which I had**  
 23 **were referred to me through the link to the**  
 24 **DWR ASR website. I don't actually remember her**  
 25 **giving me any specific link, though she may have**

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1 **said you should look at this report or that**  
 2 **report, and so those certainly were looked at.**  
 3 **But it -- she provided me no -- nothing but**  
 4 **specifically the link. And I also did**  
 5 **independent research as to what reports might be**  
 6 **applicable to -- to the matter that were either**  
 7 **not on the DWR website or were -- but were**  
 8 **listed on USGS database.**  
 9 Q. Thank you. That anticipated my next question  
 10 actually.  
 11 Were you present for the discussion by  
 12 other witnesses of model pumping scenarios that  
 13 compared baseline pumping in the aquifer with  
 14 scenarios involving increased pumping by the  
 15 City for defined periods?  
 16 **A. I'm not aware of those discussions by the**  
 17 **witnesses.**  
 18 Q. Do you have any recollection of -- of any of the  
 19 witnesses being asked questions about pumping  
 20 scenarios where the City pumping in the aquifer  
 21 would be doubled, with some other assumptions,  
 22 and they were looking at a report that projected  
 23 chloride impact?  
 24 **A. Just most of my input on the -- on those -- on**  
 25 **discussions with other witnesses was regards to**

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1 **surface water impacts. I don't remember ever**  
 2 **discussing scenarios as to pumping and -- and**  
 3 **putting those into models. I basically was**  
 4 **talking about the outputs that I was seeing and**  
 5 **how those might be represented in the models to**  
 6 **get a better understanding, but I -- I was not**  
 7 **involved in any pumping scenarios or anything**  
 8 **like that beyond the reports that I reported**  
 9 **here.**  
 10 Q. Do you remember ever seeing a USGS document that  
 11 involved that kind of pumping simulation in the  
 12 course of your independent research?  
 13 **A. I have no memory of seeing anything like that.**  
 14 Q. If the exhibits are all present, if it's  
 15 possible to put City Exhibit 11 before the  
 16 witness, I think it may be the document, I would  
 17 like to ask the witness if he has seen that  
 18 document before?  
 19 **A. Black notebook?**  
 20 **MS. WENDLING:** I don't know. Brian,  
 21 because the exhibits are in your various  
 22 binders not numerical, could you direct us  
 23 to the appropriate binder?  
 24 **MR. MCLEOD:** Black binder, I think.  
 25 **MS. WENDLING:** Is it an exhibit to

1 the proposal or something else?  
2 **A. Brian, I'm seeing attachments, but I'm not**  
3 **really seeing exhibit numbers, could you give me**  
4 **a little better idea of what the title or -- of**  
5 **the report is that you're referring to?**

6 **BY MR. MCLEOD:**  
7 Q. Well, it would be in the actual record of the --  
8 of the hearing as City Exhibit 11, and it is  
9 that USGS Report 2014-1162, Simulation of  
10 Chloride Transport 1990 through 2008. Purple  
11 binder, I think, upon reflection. And probably  
12 behind the fifth tab there.

13 **A. I have a tab that says chloride simulation, and**  
14 **it has a report that says Open File Report**  
15 **2014-1162, Preliminary Simulation of Chloride**  
16 **Transport in Equus Beds Aquifer and Simulated**  
17 **Effects of Well Pumping, Artificial Recharge on**  
18 **Groundwater Flow and Chloride Transport near the**  
19 **City of Wichita, Kansas, 1990 through 2008. Is**  
20 **that the report?**

21 Q. Okay. Had you seen that report before or used  
22 that in the course of your analysis of  
23 chlorides?

24 **A. Brian, the title sounds familiar in looking at**  
25 **it, but as I look through the body of the**

1 **report, I really don't recognize this report as**  
2 **being something that I relied on.**

3 Q. Okay. In your report, you note that pumping to  
4 the lower levels would increase hydraulic  
5 gradient and potentially accelerate the movement  
6 of chloride. Do you use potentially there  
7 because you aren't sure whether it would or  
8 wouldn't accelerate the movement of chlorides?

9 **A. I use potentially as -- because I did not**  
10 **calculate or make any calculation that -- that**  
11 **would say one way or the other, I didn't do a**  
12 **transport -- a chloride transport model or**  
13 **anything along that line. So I was looking at**  
14 **the report I referred to simply from the aspect**  
15 **of what it was reporting and how the aquifer and**  
16 **the chloride transport would act.**

17 Q. Okay. Let's -- let's look at that study and  
18 specifically we can still stay with the study  
19 abstract that you cited in your report, which  
20 mentions that the chlorides in the Burrton plume  
21 moved about three miles during the past 40 or  
22 45 years. So if we did the math on that, for  
23 the average per year movement, that would be  
24 about .75 to point -- excuse me, .075 to  
25 .066 miles per year on average in those 40 or

1 45 years, wouldn't it?

2 **A. That would indicate the transport speed is --**  
3 **per year is -- is approximately that, yes.**

4 Q. And then in the decade 1995 to 2005, in that  
5 decade, the total movement was only about half a  
6 mile, or if we did the math about .05 per year  
7 on average, correct?

8 **A. I haven't -- I haven't done the math, but I**  
9 **accept your estimation.**

10 Q. And the study attributes this to decrease in the  
11 hydraulic gradient after 1992, correct?

12 **A. It -- it contribute -- attributes it to that and**  
13 **the actions that were taken in connection with**  
14 **the -- the chloride plume.**

15 Q. If -- if we look at the fractions of miles and  
16 convert to feet in terms of feet of movement, do  
17 you agree that for the 45 -- the 40- to 45-year  
18 period it would come to about 396 to 348 feet  
19 per year on average and for the 1995 to 2005  
20 period about 264 feet per year on average?

21 **A. Those would be comparable, yes.**

22 Q. So if -- if we were to compare the two periods  
23 and subtract to discover the reduction in  
24 movement from the annual average in the 40- to  
25 45-year period to the annual average for 1995 to

1 2005, the difference would be about 132 to  
2 84 feet per year, wouldn't it?

3 **A. Yes.**

4 Q. Given those figures from the study abstract,  
5 if -- if we suddenly flipped back to pre-1992  
6 water level and hence to the pre-1992 rates of  
7 migration for a year or two years, would you  
8 expect the impact to be more than a few hundred  
9 feet of additional chloride migration?

10 **A. Well, if it's only for a short period of time,**  
11 **yes, I would agree with you there on that. I**  
12 **don't know if it's only a short period of time,**  
13 **depends on the recovery rate and things like**  
14 **that.**

15 Q. Right. And to some extent, the question was a  
16 hypothetical, that if assuming that it was just  
17 that for a year or two. By contrast, if water  
18 levels in the aquifer were drawn down from  
19 current levels to 1998 levels and that persisted  
20 for a period of 20 years, would you expect that  
21 to increase the groundwater hydraulic gradient  
22 and increase chloride migration as a result?

23 **A. I don't know the answer to that question. I**  
24 **don't know what I would expect because I'm not**  
25 **sure relative to any other period of time what**

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1 **1998 would entail.**  
 2 Q. So if we were to assume that 1998, since it's in  
 3 that 1995 to 2005 time frame, that if the  
 4 movement of chlorides would be at that reduced  
 5 rate of about .5 miles a year for the years in  
 6 that time frame and it persisted for a 20-year  
 7 period, would you end up with a greater or  
 8 lesser impact than the -- the impact of pre-1992  
 9 levels for only a two-year period?  
 10 **A. I -- I don't know the answer to that question.**  
 11 **The -- the impact that -- '98 within a period**  
 12 **average, I don't know where it sat as far as --**  
 13 **you know, an average is done over that period of**  
 14 **time; 1998 might have been a high travel time or**  
 15 **it might have been a low travel time, I don't**  
 16 **know where it sits in relative to the average.**  
 17 **However, if it did agree with that average, then**  
 18 **20 years versus two years at the other, you know**  
 19 **that's a -- kind of framed in a way that, yeah,**  
 20 **two years is not going to be as drastic as**  
 21 **20 years at another level.**  
 22 Q. And, indeed, if we -- if we just used the  
 23 average numbers for the two periods as -- as  
 24 they are calculable from the USGS report, we'd  
 25 be looking using 264 feet per year for 1998 at a

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1 mile of chloride migration over a 20-year  
 2 period, wouldn't we?  
 3 **A. If it's the .05 feet -- or miles per year**  
 4 **average, yes, it would be -- you would be right**  
 5 **as to the number of miles that it would occur**  
 6 **over 20 years.**  
 7 Q. And by contrast, the higher pre-1992 average  
 8 rate of migration, if confined to only two  
 9 years, we would expect around 792 or 696 feet of  
 10 chloride migration during those two years, even  
 11 though it's moving at a much higher annual rate,  
 12 correct?  
 13 **A. Using those averages, you would get exactly as**  
 14 **you had calculated.**  
 15 Q. Mr. Austin, I -- I know you were present when  
 16 counsel were debating it and the hearing officer  
 17 had to make a ruling, but in that you are the  
 18 witness testifying today and you wrote your  
 19 expert report, I will just ask you, is there a  
 20 discussion of minimum desirable streamflow in  
 21 this expert report?  
 22 **A. On streamflows in general and -- and when you're**  
 23 **dealing with ground -- groundwater flow, either**  
 24 **in or out, it is related to base flow, which**  
 25 **minimum desirable streamflow is part of. But**

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1 **the term min -- minimum desirable streamflow was**  
 2 **not part of my report.**  
 3 Q. And is there discussion in your report about the  
 4 impact of diversion for -- for the ASR works on  
 5 minimum desirable streamflow or on base flow?  
 6 **A. Actually there is. When I talk of groundwater**  
 7 **impact -- groundwater pumping impacts and how**  
 8 **they can be -- groundwater levels impacts on**  
 9 **streamflow, that is talking about base flow**  
 10 **because base flow is that portion of streamflow**  
 11 **that is produced by groundwater infiltration**  
 12 **into the stream.**  
 13 Q. Okay. And to clarify, I was asking about  
 14 diversion from the river for ASR works, is -- is  
 15 there anyplace in your expert report where you  
 16 discuss the impact of diversion from the river  
 17 for ASR works on either base flow or minimum  
 18 desirable streamflow?  
 19 **A. The only place I talk about diversions from the**  
 20 **river is in connection with the accounting**  
 21 **process in the assignment of credits to that --**  
 22 **the AMCs to that pumping, and so I don't talk**  
 23 **about the diversion's effect on streamflow. I**  
 24 **was looking at the AMCs and whether or not**  
 25 **100 percent, or whatever the percentage assigned**

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1 **for AMC purposes to streamflow -- to streamflow**  
 2 **diversions, was appropriate or not or what the**  
 3 **value might be appropriate. So I would say my**  
 4 **answer is I did not look at diversion streamflow**  
 5 **in regard to base flow, per se.**  
 6 Q. Would you agree with me, Mr. Austin, that, in  
 7 fact, under the terms of the existing ASR  
 8 permits, which would not change on -- if the  
 9 permit modifications were approved, the City  
 10 can't divert water from the river unless the  
 11 river is above base flow; isn't that true?  
 12 **A. I think -- I think the value I saw was 30 cfs as**  
 13 **the standard, and that may or may not be base --**  
 14 **wholly base flow depending on what's happening**  
 15 **in the river. But if -- if your accounting**  
 16 **model is showing 38,000 acre-feet of flow going**  
 17 **to the stream, that's 38,000 acre-feet of base**  
 18 **flow. So if you couldn't pump -- if you weren't**  
 19 **able to pump base flow, there'd be 38,000**  
 20 **acre-foot in that stream that you could not**  
 21 **pump. So as a consequence, I'd say that it's**  
 22 **30 cfs is what I thought I read in the**  
 23 **conditions and -- and not base flow because it**  
 24 **would almost eliminate you ever pumping from the**  
 25 **river.**

1 Q. Mr. Austin, when -- in the years when you were  
 2 with DWR, how many permit applications did you  
 3 analyze for minimum desirable streamflow  
 4 compliance?  
 5 **A. I did not analyze permit applications for**  
 6 **minimum desirable streamflows because that was a**  
 7 **water appropriations right. However, in**  
 8 **connection with structures, water structures and**  
 9 **obstruction to the streams, 82a-301 through**  
 10 **305(a), I did review dams, levies, bridges,**  
 11 **other obstructions in streams as to their**  
 12 **impairment of surface water rights. But that**  
 13 **did not -- that did not at that time include**  
 14 **MDS. I moved to interstate efforts in 2000.**  
 15 **MDS was, I believe, estab -- actual flows for**  
 16 **MDS were established in, what, 1999, or**  
 17 **somewhere along that, '94, so I was not involved**  
 18 **with that particular review.**  
 19 Q. Do you know --  
 20 **A. I would point out that surface -- surface**  
 21 **water -- impairment of surface water diversions**  
 22 **is in some respects the same potential issue,**  
 23 **it's just that it is a water appropriation**  
 24 **right, stream, and not a MDS. But MDS is an**  
 25 **appropriation essentially. So the analysis**

1 **would be similar.**  
 2 Q. Do you know whether any of the Intervenor's claim  
 3 surface rights in the river adjacent to the  
 4 aquifer?  
 5 **A. I only heard about a third of what you said**  
 6 **based upon the movement of your mask?**  
 7 Q. I'll -- I'll repeat the question and try to  
 8 speak a little louder. Do you know whether any  
 9 of the Intervenor's involved in this case claim  
 10 surface water rights in the river adjacent to  
 11 the aquifer?  
 12 **A. I don't know that. That was not part of my**  
 13 **study.**  
 14 Q. Do you know if there's any party other than the  
 15 City of Wichita that claims surface rights in  
 16 the river adjacent to the aquifer?  
 17 **A. I don't know that either, whether it was only**  
 18 **the City of Wichita or there are other folks**  
 19 **either upstream or downstream of Wichita.**  
 20 Q. Mr. Austin, were you present when Paul McCormick  
 21 testified about the AMC accounting model?  
 22 **A. I believe I missed one -- one day of**  
 23 **Mr. McCormick's testimony, so I don't know -- I**  
 24 **believe he did talk about things he modeled in**  
 25 **part during the part that I heard, but I don't**

1 **remember --**  
 2 **MR. STUCKY:** We're not hearing  
 3 Mr. Austin's answer.  
 4 **A. Sorry, I had it on mute.**  
 5 **BY MR. MCLEOD:**  
 6 Q. I don't think it was Mr. Austin, suddenly we  
 7 just seemed to lose audio.  
 8 **A. I hit mute instead of un-mute, so I was giving**  
 9 **you an answer and it wasn't transmitting to**  
 10 **anybody. So unless you could read -- read my**  
 11 **lips.**  
 12 **In connection with Mr. McCormick's**  
 13 **testimony, I believe I missed part of that, but**  
 14 **I do remember that he, at least the part I**  
 15 **listened to, that he did talk about AMC, but I**  
 16 **don't know whether that was the whole discussion**  
 17 **or not.**  
 18 Q. So in your review of the AMC credits, you were  
 19 looking chiefly at accounting reports from  
 20 actual physical recharge from years from 2012  
 21 through 2016, weren't you?  
 22 **A. I thought it was 2013, '14, '15, and '16 that I**  
 23 **reviewed, but, yes, that -- that would be**  
 24 **correct.**  
 25 Q. And all of those years, the aquifer has been

1 pretty full, wasn't it?  
 2 **A. It was fairly full, yes.**  
 3 Q. I mean, would -- would it be true that over the  
 4 course of that time span and coming back from  
 5 the drought of 2011 and '12 that generally those  
 6 water levels would be trending upward for that  
 7 whole period?  
 8 **A. Trending upward for that whole period, it**  
 9 **appears from an accounting information that it**  
 10 **was trending upward, but there's no guarantee**  
 11 **that it would. I mean, nature is nature and --**  
 12 **and so physically occurs -- what occurs occurs,**  
 13 **and if pumping would -- changed or something**  
 14 **like that, it certainly would also add to it.**  
 15 **But, yes, the accounting information indicates**  
 16 **that it was moving upwards.**  
 17 Q. And I think that you recognized in your earlier  
 18 testimony on direct that when the City goes and  
 19 puts recharge in the aquifer in its -- in its,  
 20 say, 2015 condition when the aquifer is  
 21 relatively full, a lot of that is just going to  
 22 leak out into the adjacent streams, correct?  
 23 **A. It's a little bit like filling a cup and then**  
 24 **adding more to the cup and it goes -- it goes**  
 25 **over the rim maybe. So, yes, it would tend to**

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1 **send more water to it, it would increase the**  
 2 **loss rate, I would presume, of the recharge**  
 3 **credits to the stream, as well as other water to**  
 4 **the stream.**  
 5 Q. And because of that, the retention rate of  
 6 recharge in a year like 2015, it's going to be  
 7 much lower than if the City based an AMC credit  
 8 on, say, the year 1998 and its retention  
 9 percentage?  
 10 **A. Yes, it -- yes, it would, but also it would be a**  
 11 **reflection of the actual conditions under which**  
 12 **recharge would have occurred. So in some**  
 13 **respects, regardless of how you compute what**  
 14 **artificial recharge might look like on a**  
 15 **specific date, the conditions of the aquifer**  
 16 **would dictate what the losses would look like,**  
 17 **and if they are high, the losses would be high.**  
 18 Q. So isn't the effect of that, Mr. Austin, if  
 19 you -- if you base the AMC recharge credit on  
 20 the leakage that would occur from physical  
 21 recharge, aren't you really then punishing the  
 22 City for keeping the aquifer at a full level by  
 23 imputing that same leakage rate as if the City  
 24 were trying to physically recharge that full  
 25 aquifer?

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1 **A. I think -- I don't think it's a penalty, I think**  
 2 **it is simply reflecting the actual conditions of**  
 3 **the aquifer and -- rather than trying to**  
 4 **artificially find a aquifer level that minimizes**  
 5 **that effect. If you're going to store water,**  
 6 **recharge water or by theory put recharge water**  
 7 **in there, then the losses should be reflected --**  
 8 **reflective of the actual conditions, not some**  
 9 **other condition.**  
 10 Q. And I understand that that's your opinion,  
 11 Mr. Austin, and you weren't present for the part  
 12 of Paul McCormick's testimony where he discussed  
 13 rather more conservative leakage assumptions  
 14 were used, were you?  
 15 **A. The leakage assumptions were part of my review**  
 16 **for my expert report. However, I did not**  
 17 **tabulate them -- or I did not find the summary**  
 18 **of those results until after I had written those**  
 19 **reports. I didn't tabulate it at all, I just**  
 20 **read the summary I ran from 2009 through 2018.**  
 21 Q. Do you recall if the proposal itself contains  
 22 some statements acknowledging that the leakage  
 23 rates used in the proposed AMC accounting method  
 24 are not as great as the leak -- leakage rates  
 25 that would have pertained if the City were

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1 recharging the full aquifer?  
 2 **A. The leakage rate is higher in the actual**  
 3 **conditions than it would be under the proposed**  
 4 **accounting method, yes.**  
 5 Q. So -- so, Mr. Austin, if there is no -- if the  
 6 AMC credits are not approved and the only credit  
 7 available to the City is the existing physical  
 8 recharge credit, would you agree with me that in  
 9 order to achieve a better retention of recharge  
 10 credits in the aquifer, the City would have to  
 11 lower the water levels to a point where recharge  
 12 credits are retained better than they can be at  
 13 the full aquifer level?  
 14 **A. As I said, they would have to balance their**  
 15 **operation so that they maximize their recharge**  
 16 **rate and minimize their leakage rate.**  
 17 Q. Do you know, Mr. Austin, during the 2011, 2012  
 18 drought when you were showing us that the -- the  
 19 achievement of minimum desirable streamflow was  
 20 only 60 something percent, during that period,  
 21 did DWR administer groundwater users' rights in  
 22 order to protect minimum desirable streamflow?  
 23 **A. I don't know that they did, I'm not aware of**  
 24 **that.**  
 25 Q. Do you believe that that's what should happen, I

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1 mean, if we're treating minimum -- minimum  
 2 desirable streamflow as a senior right, a senior  
 3 surface right in the river, in times of drought  
 4 when minimum desirable streamflow is threatened,  
 5 should DWR shut down junior groundwater users,  
 6 starting with the most junior groundwater users,  
 7 to protect that minimum desirable streamflow?  
 8 **A. The MDS administration is done in connection**  
 9 **with long-term declines in MD -- in the MDS**  
 10 **achievement, so I would not expect that during a**  
 11 **drought as long as normal pumping -- or pumping**  
 12 **in reaction to the drought occurred, I would not**  
 13 **expect DWR to jump in and do that type of**  
 14 **administration. They might but that would not**  
 15 **be my suspicion. The ones that I know about are**  
 16 **systemic problems that they're addressing, not**  
 17 **transient problems that may be related to the**  
 18 **drought.**  
 19 Q. If you would look at figure 16 to the City's  
 20 proposal?  
 21 **A. I found it.**  
 22 Q. Mr. Austin, if you would look at that figure,  
 23 does it appear to you to be graphically  
 24 comparing results of the proposed AMC accounting  
 25 methodology with the existing physical recharge



1 methodology?  
 2 **A. Let's see, it's a graphical representation of**  
 3 **the table 4-2 below?**  
 4 Q. Yes, that is a graphical representation of  
 5 figure 4-2. Looking at that graphical  
 6 representation, does it appear to you that the  
 7 accounting methodology proposed for the AMCs  
 8 follows pretty closely along the same path as  
 9 the accounting methodology for the existing  
 10 physical recharge credit?  
 11 **A. It appears to do a better job in early years and**  
 12 **starts to deviate to the greater much more in**  
 13 **the -- during the years of the accounting which**  
 14 **I reviewed, 2013, '14, '15, and '16.**  
 15 Q. And that would be attributable to the difference  
 16 in the leakage rates that are being used,  
 17 wouldn't it?  
 18 **A. I believe so.**  
 19 Q. Mr. Austin, I -- I don't know if you remember  
 20 the details of the -- the reporting and  
 21 evaluation that Mr. Romero testified about, but  
 22 in presenting their view of -- of the impact if  
 23 the City pumped its 40,000 acre-feet water  
 24 rights plus what it could draw with existing  
 25 limits if it had all the AMCs that it could

1 done, I mean, not that we have a ton of  
 2 questions but we do have some questions.  
 3 **PRESIDING OFFICER:** Okay. We'll --  
 4 we'll take those up after lunch, we'll  
 5 take -- we'll go off the record and take a  
 6 break for an hour, thank you.  
 7 (Thereupon, a lunch recess was  
 8 taken; whereupon the following was  
 9 had.)  
 10 **PRESIDING OFFICER:** So we're back on  
 11 the record, and direct examination for  
 12 George Austin had just concluded -- or, no,  
 13 I'm sorry, cross-examination by the City of  
 14 George Austin had just concluded, so now we  
 15 turn to GMD2 and I will hand this over  
 16 either to Dave or Tom, whichever one of you  
 17 is going to handle that.  
 18 **MR. STUCKY:** I'll -- I'll be asking  
 19 the questions. But just to clarify,  
 20 historically we've had --  
 21 **PRESIDING OFFICER:** Oh, I'm sorry,  
 22 Dave?  
 23 **MR. STUCKY:** Yes.  
 24 **PRESIDING OFFICER:** Forgive me, I  
 25 think I took this out of order.

1 accumulate, they came up with, I believe, a  
 2 drawdown of 5 feet as the impact from that in  
 3 the most affected part of the well field, and my  
 4 question is have you calculated the impact of  
 5 streamflow of a 5-foot-lower water level?  
 6 **A. I have not. However, I don't know if it was the**  
 7 **scenario that you described, but Mr. Romero did**  
 8 **present information that there was a 10 cfs**  
 9 **reduction in streamflow in his -- in his work**  
 10 **and -- of which half of that, 5 cfs, he assigned**  
 11 **to the Little Ark River.**  
 12 **MR. MCLEOD:** I don't have further  
 13 questions for the witness.  
 14 **PRESIDING OFFICER:** Okay, thank you.  
 15 We'll move on to GMD, Dave or Tom, do you  
 16 have questions?  
 17 **MR. STUCKY:** Can we have a short  
 18 break for lunch and just reconvene after  
 19 lunch? Yeah, we have a -- a series of  
 20 questions.  
 21 **PRESIDING OFFICER:** I think that's a  
 22 fair request. So it's about noon, let's  
 23 resume at 1:00. Thank you.  
 24 **MR. STUCKY:** Yeah, I think people  
 25 will get pretty hungry by the time we're

1 **MR. STUCKY:** Yeah, I think it was  
 2 DWR historically, is what I was going to  
 3 say, that's gone next. If you wondered why  
 4 there was a long delay from us when you  
 5 asked if we were ready to go, that was why  
 6 so ...  
 7 **PRESIDING OFFICER:** Well, I'm sorry,  
 8 you probably should have pointed that out.  
 9 And not to disadvantage anyone, Stephanie,  
 10 would you be ready if DWR goes next, or did  
 11 I mess that up?  
 12 **MS. MURRAY:** I actually don't -- oh,  
 13 my gosh, that's so loud. I actually don't  
 14 have any questions for Mr. Austin so Dave  
 15 can go next.  
 16 **PRESIDING OFFICER:** That makes it  
 17 easy. Okay. So then, Mr. Stucky, please  
 18 go ahead.  
 19 **MR. STUCKY:** Let -- let the record  
 20 reflect that Stephanie gave the wrong  
 21 answer as far as what I was expecting.  
 22 But -- so we'll proceed.  
 23 //  
 24 //  
 25 //

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1 **CROSS-EXAMINATION**  
 2 **BY MR. STUCKY:**  
 3 Q. First of all, on -- Mr. Austin, I'm not seeing  
 4 you on my screen, are you still there?  
 5 **A. I am.**  
 6 Q. And, Mr. Austin, you talked in your resume, your  
 7 CV about your years working at DWR, and I was  
 8 trying to add that up, would you say, was it  
 9 roughly 22 years that you worked for DWR? Is  
 10 that correct?  
 11 **A. It was 30 years.**  
 12 Q. 30 years, okay. And so in your 30 years of  
 13 working for DWR, what I heard you testify to is  
 14 that you had built or helped build a couple of  
 15 models; is that correct?  
 16 **A. I'm sorry, I hit mute. Yes, that is correct.**  
 17 **It's not all the models I had built but the ones**  
 18 **that were pertinent to this discussion, yes.**  
 19 Q. Okay. So -- so you said you helped build a  
 20 couple models, but just to clarify the record,  
 21 you helped work on -- on other models, like  
 22 where you would -- when I say worked on them,  
 23 you would have analyzed them, you would have  
 24 provided insight on them, you would have looked  
 25 at the inputs. Is it true that in -- aside from

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1 the two that you built, you would have worked on  
 2 other models?  
 3 **A. That's true, and I also built other models.**  
 4 Q. Okay. Okay. So just to clarify the record,  
 5 when you said originally you meant -- what you  
 6 meant by building two models, can you clarify  
 7 the record? You just said that you also built  
 8 other ones, so can you clarify that?  
 9 **A. Well, I built models regarding dams. For**  
 10 **instance, one of the first ones I built, we**  
 11 **didn't even have computers to do the programming**  
 12 **on, so I actually did it on a magnetic strip**  
 13 **that went into a programmable hand calculator.**  
 14 **And what that did was route -- what we call**  
 15 **flood routing, route flood through a dam**  
 16 **structure, spillways, and that sort of thing to**  
 17 **determine if it was adequate. And that -- that**  
 18 **later developed into a standard, a model that**  
 19 **did a lot more than that but -- such as checking**  
 20 **erosion and -- and things like that, but that --**  
 21 **that was built and utilized by DWR for quite**  
 22 **sometime.**  
 23 **Specifically, in the regulatory role,**  
 24 **oftentimes we reviewed models that were used for**  
 25 **floodplain zoning, flood insurance, stream**

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1 **operations, and those sorts of things. But we**  
 2 **developed models with which to review those that**  
 3 **were independent. You know, if it was MODFLOW,**  
 4 **maybe a simplified model that would see if the**  
 5 **results were within the neighborhood as an**  
 6 **independent review. I did not do that in this**  
 7 **case but just to let you know that model**  
 8 **building was part of our regulatory**  
 9 **responsibility in the way we reviewed various**  
 10 **regulations and review and issuance of permits.**  
 11 Q. So how many dam models would you say you built?  
 12 **A. Well, the base model, I built, let's see, built**  
 13 **it on the calcu -- well, first I built it**  
 14 **graphically on a cal -- that programmable**  
 15 **calculator, then basic, and later on two**  
 16 **different spreadsheet-type programs like Excel,**  
 17 **and so, you know, probably seven or eight**  
 18 **models, but at the same time those were part of**  
 19 **that regulatory process. And as far as DWR was**  
 20 **concerned, some of those continue on, but I**  
 21 **imagine most of them have -- have now gone to**  
 22 **models developed by federal agencies like USGS**  
 23 **or -- or that sort of thing. But, yeah.**  
 24 Q. So to clarify the record and the testimony, in  
 25 your career, you've -- you've probably built

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1 somewhere north of ten models, give or take. Is  
 2 that -- is that a true statement?  
 3 **A. Well, as a base model, probably used them on**  
 4 **close to 700 dams, for instance, on the**  
 5 **assessment of dam safety; dam breach analysis,**  
 6 **probably, oh, about 125 dams. And so, yeah,**  
 7 **there -- built multiple models but they were the**  
 8 **same model, just being applied to different**  
 9 **situations.**  
 10 Q. And -- and help me out here, just -- just to try  
 11 and quantify for someone that's, you know, a  
 12 layperson like myself, how impressive that is, I  
 13 mean, isn't it true that many engineers that may  
 14 be involved in water resources and water  
 15 allocation, isn't it true that many engineers  
 16 may never build a model in their entire career?  
 17 Is that a true statement?  
 18 **A. Well, it's probably true. A lot of models have,**  
 19 **in general, become so numerous that a lot of the**  
 20 **stuff I was doing because they didn't exist at**  
 21 **the time was -- is now a plug-and-play type**  
 22 **program that you can purchase commercially or --**  
 23 **or you can get free from the federal government.**  
 24 Q. Right. And so that's -- that's my question, I  
 25 mean, we're not talking about, you know,

1 building a set of Legos, looking at some  
2 instructions and building a set of Legos? When  
3 we build a model, it's a very involved process  
4 and a -- and a very impressive set of steps that  
5 one has to go through; is that correct?  
6 **A. Yes, one -- and that's prob -- probably where**  
7 **also being a physicist comes in because when we**  
8 **talk boundary conditions, most physics problems**  
9 **are solved by understanding what the boundaries**  
10 **of the -- the thing that you're interested in.**  
11 **For instance, if you're looking at planetary**  
12 **movements, you might have to under -- in order**  
13 **to solve it, you might have to understand what**  
14 **the boundaries in infinity or zero, what those**  
15 **boundaries look like.**  
16 Q. And so just -- just to clarify, over the years  
17 because of the various models you -- you have  
18 built, you would consider yourself an expert  
19 in -- in modeling and building models and things  
20 of that nature, correct?  
21 **A. Yes, as far as the modeling process is**  
22 **concerned.**  
23 Q. Okay. You mentioned in some of your prior  
24 testimony that you were involved in helping with  
25 litigation between Kansas -- Kansas and Colorado

1 and Kansas as the accounting method for state  
2 line river flow deliveries. So when you talked  
3 about this river modeling you did, it was  
4 referring to this model that you would have  
5 created, helped with that process; is that  
6 right?  
7 **A. Yeah, I -- I created it and the initial model**  
8 **was reviewed by David Barfield at the time; he**  
9 **was not chief engineer, he was the head of the**  
10 **interstate section. And then based upon his**  
11 **comments, essentially caught an error, a**  
12 **mathematical error I had in it, and we submitted**  
13 **that to Colorado and through negotiation came up**  
14 **with the final form and format that is now, for**  
15 **the Compact, the law of the river as far as**  
16 **delivery from John -- John Martin to state line.**  
17 Q. And that -- that river modeling, is -- is that  
18 similar, just to make sure I understand, come  
19 full circle here, is the river modeling you did  
20 there, does it have a similar applicability? I  
21 get that we're talking about a different river,  
22 we're talking about a different location, but  
23 would the applicability of the modeling you did  
24 there be similar to what City of Wichita would  
25 be looking at if the City of Wichita had,

1 and some of that interstate litigation. Do you  
2 recall that testimony?  
3 **A. Yes.**  
4 Q. And I think I saw in some of your notes in, I  
5 believe, in your CV that you helped prepare  
6 arguments for the Supreme Court; is that  
7 correct?  
8 **A. Well, I wouldn't say that because I'm not an**  
9 **attorney, but I -- I did prepare -- prepare**  
10 **engineering analyses that were used by the**  
11 **attorneys in -- in the action which ended up in**  
12 **the Supreme Court.**  
13 Q. Okay. So if you could turn to your CV, if you  
14 would, which was admitted into evidence, if you  
15 could turn to your CV, bottom page of your CV,  
16 are you -- are you there, Mr. Austin, bottom of  
17 your CV?  
18 **A. Yes.**  
19 Q. Okay. And for the record, I'm sorry, it's the  
20 first page at the very bottom of his CV, and I'm  
21 reading from it, it says, participated in  
22 preparation for oral arguments before the  
23 U.S. Supreme Court, participated in settlement  
24 conferences with Colorado, and then it says,  
25 created Arkansas River model adopted by Colorado

1 indeed, analyzed minimum desirable streamflow,  
2 would it be similar concepts?  
3 **A. It -- it could be. It is more or less a river**  
4 **operations model, which it -- it takes flow from**  
5 **one point in the river to another, and in the**  
6 **case on the Ark River downstream of state line,**  
7 **there are seven different nodes that it**  
8 **basically is computing a river flow. But that**  
9 **is -- that's not analyzing the impact of**  
10 **groundwater diversions, but it is anticipating**  
11 **surface water diversions of the various ditch**  
12 **irrigators on -- on the Arkansas River.**  
13 Q. And -- and also just explain to me the impact of  
14 having created this model in this situation in  
15 the sense of whether or not others would then  
16 base their future work off of what you did.  
17 And, for example, my familiarity is in the  
18 practice of law, Tom Adrian has several  
19 published articles on water law, and it's very  
20 possible that someone else who's arguing in a  
21 court may cite Tom Adrian's arguments that he  
22 has published on water law as a basis for their  
23 argument, and so is the same true here, in other  
24 words, would other individuals look at the  
25 modeling you did for this Arkansas River model

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1 and base some of their work off of what you did  
2 or expand upon it in the future?  
3 **A. It is possible. I am aware that Colorado State**  
4 **University now teaches the Muskingum Method,**  
5 **which is the basis of what I modeled, in their**  
6 **college of engineering, and -- and so the**  
7 **methodology, at least, is -- is alive and well**  
8 **in the engineering field.**  
9 Q. So in that sense, others that followed you in  
10 the modeling you did, it appears, base some of  
11 their work on -- on what you had already done or  
12 built upon what you had already done; is that  
13 correct?  
14 **A. Well, I don't know of any specific instances**  
15 **outside the fact that the same methodology is**  
16 **being used by others.**  
17 Q. Okay. And so if I were to ask you if the  
18 MODFLOW model would have -- have built off of  
19 any of the modeling you did or anything of that  
20 nature, you wouldn't know the answer to that?  
21 **A. That's correct. In fact, as far as I know, the**  
22 **MODFLOW model was pretty much brought into**  
23 **existence by Marios Sophocleous of USGS, he's**  
24 **the primary modeler, but he actually built on a**  
25 **model previously done by Steve Larson, who is**

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1 **with Sophocleous' firm now, and they both worked**  
2 **for the USGS at the time. So, you know, it --**  
3 **it is true that these models do tend to have a**  
4 **evolution based upon how they're applied and who**  
5 **applies it. Like I said, the original MODFLOW**  
6 **concept was to track pollutant transport, and --**  
7 **and it was found to be expanded to groundwater**  
8 **pumping in general, or groundwater types of**  
9 **diversions.**  
10 Q. Okay. And just to be clear, what you did with  
11 the Arkansas River model, that would have  
12 incorporated the concept of minimum desirable  
13 streamflow in concept, at least; is that  
14 correct?  
15 **A. No, I don't think so.**  
16 Q. Okay. What -- what subsequent modeling did you  
17 do that would have incorporated the concept of  
18 minimum desirable streamflow?  
19 **A. The -- it would have introduced the concept of**  
20 **base flow, which minimum desirable streamflow is**  
21 **a subset of. So I was not working in an**  
22 **environment where minimum desirable streamflow**  
23 **was actually something we were seeking to**  
24 **achieve at -- at that time, and so I -- I don't**  
25 **think any of my knowledge really were utilized**

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1 **for that -- that effect.**  
2 Q. Yeah, I apologize, I did listen to your  
3 testimony carefully where you said that minimum  
4 desirable streamflow earlier this morning was --  
5 was a subset of base flow, so I am correct in --  
6 in my statement that you did, in fact, analyze  
7 base flows in -- in your prior modeling. Is  
8 that a true statement?  
9 **A. Yes, it's a boundary condition. So once again,**  
10 **when you're trying to resolve a model or resolve**  
11 **the conditions in which it operates, you have to**  
12 **look at boundary conditions.**  
13 Q. You said in your prior testimony, and I don't  
14 have the exact quote, I think -- I think what  
15 you said is that the MODFLOW model was designed  
16 to look at contaminated transports, I think was  
17 your quote. Do you recall making that  
18 statement?  
19 **A. Yes.**  
20 Q. What did you mean by that statement?  
21 **A. Well, the pollutants that -- such as petroleum**  
22 **products, arsenic, heavy metals, chlorides,**  
23 **other salts are -- were of interest to the**  
24 **environmental community under the Environmental**  
25 **Protection Act and -- well, mercury, so a lot of**

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1 **indus -- industrial contaminants had gotten into**  
2 **groundwater, and in order to clean it up, you**  
3 **had to understand how it was being transported,**  
4 **where it was going, perhaps even run the model**  
5 **and find out what its original source was and**  
6 **those sorts of things.**  
7 **So that -- it's my understanding, at least**  
8 **as I was taught, that contaminant transport was**  
9 **the original concept that the MODFLOW model was**  
10 **intended to address. And -- and it is a, I**  
11 **guess, a separate module of the MODFLOW model**  
12 **at -- at this point as it has broadened in scope**  
13 **and applicability to other things.**  
14 Q. But to clarify, and it's an important point,  
15 initially when the MODFLOW model was created,  
16 the idea of looking at contamination and --  
17 and -- and things of that nature, that was a big  
18 focus of the model at that early iteration of  
19 the model; is that true?  
20 **A. Yes, sir.**  
21 Q. You mentioned that there's a significant  
22 interplay between surface water and groundwater  
23 early on in your testimony; is that correct?  
24 **A. Yes.**  
25 Q. And so your testimony where you were indicating

1 that -- Mr. McLeod actually asked you a series  
2 of hypotheticals and he would ask you if the  
3 aquifer was kept full, for example, if that  
4 would improve minimum desirable streamflow, he  
5 asked you a series of questions like that, so  
6 does that speak to the interplay between surface  
7 water and groundwater?

8 **A. Yes, it does.**

9 Q. Mr. McLeod asked you specifically that --  
10 whether or not if the aquifer was kept full,  
11 let's just assume the aquifer is at 100 percent  
12 versus at 50 percent full, if it's at  
13 100 percent full, minimum desirable streamflow  
14 would be less impacted. Do you recall that  
15 question?

16 **A. Yes. Yes.**

17 Q. Let me -- let me take that a step further. In  
18 the event, let's say, that the aquifer is  
19 relatively full or 100 percent full, however we  
20 want to look at it, and at that point the City  
21 decides to withdraw its aquifer maintenance  
22 credits, at that point it's withdrawing the  
23 credits, it's taking water out of the aquifer,  
24 as the City takes that water back out of the  
25 aquifer, how would that impact minimum desirable

1 of the City's proposal is to lower the minimum  
2 index level, in other words allow the City to  
3 withdraw water below a current minimum. If they  
4 were to lower that current minimum index level  
5 and -- and drop that current minimum index  
6 level, from what you told Mr. McLeod and  
7 testified to Mr. McLeod, wouldn't dropping that  
8 minimum index level also adversely impact  
9 minimum desirable streamflow?

10 **A. Yes, it would, it would affect it greater than  
11 historically it has been affected by pumping  
12 because they're going below historic low levels.  
13 So the base flow would be affected, and,  
14 therefore, if it's affected enough, MDS would be  
15 hard to achieve at the lower level.**

16 Q. Now, let me ask you this: Did the City, in your  
17 view, adequately model or demonstrate what the  
18 impact to minimum desirable streamflow would be  
19 based on lowering the minimum index level, did  
20 they model that?

21 **A. I'm not aware of any of their models actually  
22 addressing the minimum index -- that minimum  
23 index level because that was established not  
24 through modeling but by a contingency amount,  
25 which --**

1 streamflow?

2 **A. Well, initially, it would not necessarily have a  
3 large effect, but if it's a large quantity that  
4 they're withdrawing, dropping the groundwater  
5 levels, then they would reduce the amount of  
6 base flow that's occurring, the groundwater  
7 that's infiltrating into the stream. And in  
8 doing so, it's possible that they would affect  
9 the achievement of MDS in that stream.**

10 Q. So in other words, over a longer period of time,  
11 if they continue to withdraw aquifer maintenance  
12 credits and -- and the corresponding water from  
13 the aquifer, over time it could adversely impact  
14 minimum desirable streamflow; is that true?

15 **A. It -- it could do that. Of course, it's  
16 dependent on how much they're withdrawing and --  
17 and for what period of time.**

18 Q. Let me ask you the -- the same question by  
19 extension, Mr. McLeod asked you if the aquifer  
20 was completely full, minimum desirable  
21 streamflow would be less affected than if the  
22 aquifer wasn't as full. Do you recall that  
23 question again?

24 **A. Yes.**

25 Q. Let me take that a step further. Another part

1 Q. In fact -- in fact, they didn't model at all how  
2 lowering the minimum level would impact --

3 **A. -- doesn't, you know, doesn't -- isn't reflected  
4 in the modeling they've done thus far.**

5 Q. I apologize, we -- we spoke over each other. In  
6 fact, they didn't model at all how lowering  
7 minimum desirable -- or lowering the minimum  
8 index level would impact minimum desirable  
9 streamflow, is that correct, they didn't model  
10 that at all, true?

11 **A. I didn't see that the models addressed any issue  
12 at that level, including MDS.**

13 Q. Did the City's model address how later  
14 withdrawing aquifer maintenance credits, did the  
15 City address how that would impact minimum  
16 desirable streamflow through its modeling?

17 **A. I don't believe so.**

18 Q. And once again, this is an example of an area  
19 where there's debate about the extent to which  
20 you talked about it in your report, even though  
21 you talk about the flow of the river in and out  
22 of the aquifer and you talk about a variety of  
23 those different concepts, but, in fact, even  
24 though you were chastised for not fully  
25 mentioning that in your report, given -- the

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1 City didn't address that at all; is that  
 2 correct?  
 3 **A. I don't see it addressed except in the -- the**  
 4 **orders of the chief engineer as far as setting a**  
 5 **limit to the surface water diversions, how --**  
 6 **how low the river could get, which was, as I**  
 7 **remember, 30 cfs.**  
 8 Q. Right. And that was a poorly worded question,  
 9 the City didn't address it at all in their  
 10 expert reports or in their modeling; is that  
 11 correct?  
 12 **A. Not that I could tell.**  
 13 Q. In your opinion from having worked at the  
 14 Division of Water Resources for 30 years, you  
 15 said you served a prior time as a hearing  
 16 officer and you served in a variety of different  
 17 capacities at the Division of Water Resources,  
 18 from all -- and you've also done a lot of  
 19 modeling, in your extensive experience, from  
 20 your understanding of statutes involving minimum  
 21 desirable streamflow and also your history  
 22 working for DWR, do you feel like, in your  
 23 expert opinion, the City of Wichita should have  
 24 done that type of modeling?  
 25 **A. I think they should have been expected to do**

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1 **that type of modeling and -- because that is one**  
 2 **of the standards that the Division of Water**  
 3 **Resources needs to assess its effect, MDS is one**  
 4 **of those standards, so failing to do so, I**  
 5 **think, leaves a big question mark as to if that**  
 6 **water right is approvable -- or the new**  
 7 **operation is approvable in the manner it's**  
 8 **presented currently.**  
 9 Q. I would ask that you flip to the first written  
 10 page of your report and let me know when you're  
 11 there.  
 12 **A. I'm there.**  
 13 Q. All right. Mr. Austin, I'm looking at the last  
 14 paragraph of that page, the paragraph that  
 15 starts, there are scale and time distributions  
 16 that limits the model. Can you follow with --  
 17 follow me to that paragraph?  
 18 **A. Yes.**  
 19 Q. In the fourth line of that paragraph, there's a  
 20 quote and it says, although irrigation pumpage  
 21 was assumed to occur only in May through August,  
 22 annual irrigation rates were calculated and used  
 23 in the simulation, end quote.  
 24 **A. That is correct.**  
 25 Q. Can you explain what that quote means?

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1 **A. Well, if you look at it as an annual rate and**  
 2 **the irrigation season is only four or five**  
 3 **months, then if you look at it as an annual**  
 4 **rate, it's maybe half or to a fourth of the --**  
 5 **the actual peak rate of diversion. And that has**  
 6 **a markedly different impact on water right**  
 7 **impairments of nearby wells.**  
 8 Q. So in other words, drawdowns would actually be  
 9 higher during peak periods. Is that a true  
 10 statement, is that what you're saying?  
 11 **A. Yes, during the operation of the -- of the**  
 12 **pumping, it would be what's known as a cone of**  
 13 **depression, it's being drawn down to the well;**  
 14 **and it's much deeper, and it also reaches out**  
 15 **from that cone in a parabolic manner to top of**  
 16 **the groundwater surface. When water well**  
 17 **measurements are done, they're done on --**  
 18 **generally on an annual basis and they're done**  
 19 **after pumping has ceased for several months; so**  
 20 **at that point, that cone of depression refills,**  
 21 **and if they pumped out more water than -- than**  
 22 **natural recharge or other recharge provided,**  
 23 **then that -- then it's lower. Well, that lower**  
 24 **level is re -- was recovered, and that lower**  
 25 **level doesn't necessarily show what the maximum**

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1 **impairment might have been.**  
 2 **In the middle of the summer, it might have**  
 3 **been quite -- quite a few feet deeper than what**  
 4 **the recovery is because typically after a**  
 5 **pumping season and when you measure in January**  
 6 **or February, you find maybe 1 or 2 feet of**  
 7 **change in the groundwater surface. It's not**  
 8 **always negative either, but you'll find a**  
 9 **limited amount of difference, and that doesn't**  
 10 **reflect what maybe for six months was many more**  
 11 **feet worth of impairment.**  
 12 Q. So in other words, the model aggregates the  
 13 pumping over the course of an entire year  
 14 instead of taking into account the peak pumping  
 15 periods and accounting for that in -- in the  
 16 model, is that essentially what you're saying?  
 17 **A. It tends to skim over that issue. When -- when**  
 18 **you're evaluating water right impairment, it is**  
 19 **a matter of whether you can use it or not for**  
 20 **its intended purposes, and just because you**  
 21 **could perhaps use it in February when its**  
 22 **intended purpose was in August when the**  
 23 **depression was at its peak, then, you know,**  
 24 **you've been impaired, even though it doesn't**  
 25 **show that in -- in the annual water measurement**

1 program.

2 Q. So as it relates to the City's modeling  
3 performed in correspondence with its proposal,  
4 tell me what this all means, how does that  
5 impact what it is the City did?

6 **A. Well, it -- it -- I think the difference is that**  
7 **a more specific model, not necessarily MODFLOW,**  
8 **that's based on peak discharge rates or pumping**  
9 **rates and relative to specific wells would show**  
10 **impairment and to how large the impairment may**  
11 **have been. If you do it according to the annual**  
12 **average -- average rates or to what it shows in**  
13 **depth the change in storage after that pumping,**  
14 **then you might get an indicator that it could**  
15 **be -- that an adjacent well could have been**  
16 **affected, but you have no information that tells**  
17 **you whether or not it actually was impaired and**  
18 **to what extent it was impaired.**

19 Q. So in other words, I asked you the question  
20 earlier based on your 30 years of experience in  
21 DWR and all the different hats you wore during  
22 that time if you thought something should be  
23 done. Again, based on all your experience, do  
24 you feel like this is work that the City should  
25 analyze in the future?

1 occurs or what have you. If you can anticipate  
2 it, then you can remedy it before it becomes a  
3 problem.

4 **So like I said, I think MODFLOW probably**  
5 **provides an indicator of those wells that are**  
6 **close to being -- have a potential for**  
7 **impairment; it just doesn't tell you whether or**  
8 **not it actually is being impaired, and if it is**  
9 **what the extent of the impairment is, and you**  
10 **need to do a much more -- a different study to**  
11 **look at that. Not look at the regional water**  
12 **levels but look at the -- the specific local**  
13 **water levels adjacent to their well.**

14 Q. And -- and to focus you in further, you said  
15 this is work the City could do. In -- in your  
16 experience as a hearing officer and your -- your  
17 years of experience in DWR, in an ideal world,  
18 is that something the City should do?

19 **A. I would recommend it to them that they should do**  
20 **it, yes.**

21 Q. Okay. I'd like to now have you turn to your  
22 Exhibit 3. It's a table, are you there?

23 **A. Yes.**

24 Q. Now, what we see on this table is that during  
25 years of a drought where the aquifer had -- had

1 **A. Well, I think the model had provided indicator**  
2 **of what potential conflicts there are to**  
3 **individual wells, and what would be needed is**  
4 **a -- a detailed study of those wells at peak**  
5 **pumping times and how much impact would actually**  
6 **occur. If it's a domestic well, which many of**  
7 **them older domestic wells don't go the full**  
8 **depth of the aquifer, you know, and at peak**  
9 **pumping times the groundwater is dropped below**  
10 **the bottom of that well, in other words the well**  
11 **becomes dry, then if you do a detailed analysis,**  
12 **you'll know ahead of time that that's a**  
13 **possibility and maybe someone goes out and**  
14 **drills the well deeper so that it wouldn't be**  
15 **impaired or dried out.**

16 Q. I think you answered my question, but I'm  
17 actually not 100 percent sure, so in other  
18 words, do you recommend this as future work that  
19 could or should be done by the City to analyze  
20 those peak areas and drawdowns to individual  
21 wells?

22 **A. I think there -- yes, I think they could -- they**  
23 **could do it. I think that's better than saying**  
24 **if a problem occurs, we'll take care of it, you**  
25 **know, or we'll -- we'll look at it when it**

1 dropped significantly, what we see in this table  
2 is that minimum desirable streamflow also  
3 decreased; is that right?

4 **A. The frequency in which it's met decreased.**

5 Q. Thanks for that clarification. So the frequency  
6 in which minimum desirable stream -- streamflow  
7 is met decreased at the points where the aquifer  
8 was lower; is that right?

9 **A. Yes.**

10 Q. And in other words, in 2011 to 2012, it was only  
11 met 63.4 percent of the time; is that true?

12 **A. Based on my calculations, yes.**

13 Q. So by extension, if the City were to pump down  
14 the aquifer past the current minimum index level  
15 and pump it down, draw down the aquifer even  
16 further, would it stand to reason that minimum  
17 desirable streamflow would be met half the time  
18 or less than half the time if that were to  
19 occur?

20 **A. Yes, I think based upon Dave Romero's work where**  
21 **he estimated as much as 10 cfs of streamflow was**  
22 **reduced. If you apply 5 cfs to -- or a**  
23 **reduction of 5 cfs to the 2011, 2012**  
24 **streamflows, you're looking at something**  
25 **substantially less than 63 percent.**

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1 Q. And -- and did you quantify that exact number,  
 2 or is it just by extension of -- of what you did  
 3 calculate and what you looked at, you believe  
 4 that it would drop to something much less  
 5 than -- than 63 percent?  
 6 **A. Well, I believe that Dave actually had in his**  
 7 **report an estimation of 54 percent achievement,**  
 8 **so I would refer you to that.**  
 9 Q. Well, and, again --  
 10 **A. Using a slightly different methodology would**  
 11 **probably get it to some -- some close range like**  
 12 **that, yes.**  
 13 Q. And once again, this -- this isn't the  
 14 Intervenor's burden of proof or the District's  
 15 burden of proof, is this work that the City  
 16 should have modeled in your view?  
 17 **A. Well, in terms of its long-term effects,**  
 18 **definitely. The MDS is an attempt to prevent**  
 19 **pumping from excessively, is I think the**  
 20 **language that's actually used, affect excessive**  
 21 **pumping to lower MDS achievement, and that's not**  
 22 **to say that during a drought you're not going to**  
 23 **have a pretty hard effect on -- on MDS but it's**  
 24 **what the long-term result it.**  
 25 Q. And this table also tells us that if we were to

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1 withdraw a significant amount of aquifer  
 2 maintenance credits in the future, if the City  
 3 were to able -- let say, for example, the City  
 4 were to accumulate its full authorized amount of  
 5 aquifer maintenance credits, and that number is  
 6 eluding me, 18,000, if they were to -- if they  
 7 were to accumulate their full amount of aquifer  
 8 maintenance credits as they're -- as they're  
 9 trying to put in their proposal, and they  
 10 withdrew all those in the future, it would stand  
 11 to reason that minimum desirable streamflow  
 12 would be significantly, adversely impacted; is  
 13 that right?  
 14 **A. I'm not sure that's obvious to me. I think if**  
 15 **recharge credits were recovered from above the**  
 16 **current index level, that is generally**  
 17 **considered unsaturated, and so that unsaturated**  
 18 **isn't normally -- that unsaturated is not**  
 19 **normally contributing to the achievement of MDS**  
 20 **or not. But if you go below that level with**  
 21 **pumping to a new lower level, then, yes, I think**  
 22 **it would have an adverse effect on MDS because**  
 23 **you're going lower than historically it had ever**  
 24 **been, and MDS is based in part on history of**  
 25 **base flows and -- and what level needs to be**

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1 **maintained in that stream.**  
 2 Q. So in other words, there's a combined effect  
 3 that if they were to lower the minimum index  
 4 level and then also withdraw a significant  
 5 amount of aquifer maintenance credits in the  
 6 future, that combined action by the City would,  
 7 indeed, adversely impact minimum desirable  
 8 streamflow, is that what you just said?  
 9 **A. I think -- I think that's what it has -- yeah,**  
 10 **that's the combination that has to be. If they**  
 11 **had 18,000 stored above the current index level,**  
 12 **that was considered un -- unsaturated, and it**  
 13 **probably, quite frankly, historically is not**  
 14 **part of base flow and MDS achievement, so you --**  
 15 **you essentially have to be pumping that below**  
 16 **the 1993 index level.**  
 17 Q. I want to now circle back to what you said  
 18 originally, that the MODFLOW model was  
 19 originally designed to look at water quality, in  
 20 essence, water contamination, water quality, I  
 21 want to circle back to that point because you  
 22 spent quite a bit of time in your report talking  
 23 about chloride movement and water quality; is  
 24 that correct?  
 25 **A. That's correct.**

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1 Q. And once again during your time with the  
 2 Division of Water Resources, you had the  
 3 occasion to look at issues involving water  
 4 quality; is that right?  
 5 **A. That's right, generally not very frequently**  
 6 **because many water quality issues were addressed**  
 7 **by the Kansas Department of Health and**  
 8 **Environment.**  
 9 Q. But when they were addressed by the Division of  
 10 Water Resources, would you have been one of the  
 11 main employees of the Division of Water  
 12 Resources that would have been involved?  
 13 **A. Only if it was primarily a surface water issue.**  
 14 **For -- for instance, I can think of a very small**  
 15 **sampling but where the chief engineer required**  
 16 **releases from reservoirs to help with the salt**  
 17 **content, the chloride content in surface water.**  
 18 **But I was not really involved with that except**  
 19 **in -- in connection with the reservoir and what**  
 20 **it would take to get a sufficient volume of**  
 21 **cleaner water to dilute the -- the chloride**  
 22 **issue.**  
 23 Q. You mentioned a moment ago that as you look at  
 24 water quality, I heard you use the term arsenic  
 25 as -- as something that may be analyzed, and



1 there are some other contaminants that you  
2 mentioned; is that correct? Was arsenic one of  
3 them you mentioned?  
4 **A. I don't remember at this -- this point, though**  
5 **arsenic and other heavy metals could be part --**  
6 **could be a contaminant that -- that would be**  
7 **looked at. Some poisons are naturally**  
8 **occurring, but if they get concentrated because**  
9 **of some activity, then -- then they can also be**  
10 **a hazard.**  
11 Q. In the cross-examination by Mr. McLeod, he keyed  
12 in on the word possibly, and he asked you if  
13 you're saying it was only possible that lowering  
14 the minimum index level and/or withdrawing AMCs  
15 would adversely impact chloride movement. Do  
16 you recall him keying in on that word possibly?  
17 **A. Yes.**  
18 Q. I'd like you to turn to the last page of your  
19 report under conclusions and findings.  
20 **A. Okay.**  
21 Q. I want you to read the very last sentence of  
22 your conclusions and findings.  
23 **A. The studies --**  
24 Q. For the record.  
25 **A. -- do not forecast future movement, though**

1 **pumping the aquifer to levels below historical**  
2 **levels would certainly accelerate movement**  
3 **towards the pumping source.**  
4 Q. So in other words, in your conclusion, you don't  
5 use the word possibly, do you? You use the word  
6 certainly, don't you?  
7 **A. That's correct.**  
8 Q. So as far as your conclusions go, you're saying  
9 with a degree of certainty here that if we lower  
10 below the minimum index levels, chloride  
11 movement will be accelerated, correct?  
12 **A. That's correct.**  
13 Q. I want you now to flip to the second page of  
14 your report when we're talking about the topic  
15 of chloride movement. In the third full  
16 paragraph, the paragraph that starts with the  
17 larger font that says U.S. Geological Survey, in  
18 the third line from the bottom, there's a  
19 sentence that reads, there's no forecast as to  
20 whether the chloride plume will move in a  
21 different direction nor if that movement would  
22 be accelerated. Is what you're referring to by  
23 that sentence the fact that the City did not  
24 forecast chloride movement and did not analyze  
25 that particular subject at all?

1 **A. That would be what I was talking about was that**  
2 **it did not appear that there was any forecast**  
3 **that -- or prediction of what direction it would**  
4 **move or -- or what gradient it would move at.**  
5 Q. So in other words, once again, you're saying  
6 with a degree of certainty here that the City's  
7 proposal would accelerate the movement of the  
8 chloride in the aquifer and the contaminants in  
9 the aquifer, but on the other hand, the City  
10 didn't model this at all. Is that a correct  
11 statement?  
12 **A. I'm not -- I'm not sure that they didn't model**  
13 **it at all 'cause as I've said MODFLOW can look**  
14 **at contaminants, but I'm not aware of their**  
15 **modeling of that --**  
16 Q. In other words, as you read through their  
17 proposal and you looked at the inputs in their  
18 modeling and things of that nature, you didn't  
19 see anywhere where they had addressed chloride  
20 movement or addressed contaminants and how their  
21 proposal would impact those contaminants, you  
22 didn't see it addressed, correct?  
23 **A. No, I didn't see it addressed.**  
24 Q. Again, based on your 30 years of experience  
25 working for DWR, do you think that's something

1 that the City could have modeled?  
2 **A. It -- it seems like to me it should be**  
3 **something, and I only state that from the**  
4 **standpoint that their own -- their own**  
5 **justification for looking at recharge and -- and**  
6 **pumping from a different source was -- was to**  
7 **slow down and prevent the salt plume from**  
8 **contaminating their own wells. So it would seem**  
9 **like that if you're going to change your process**  
10 **that you -- you still want to look at that**  
11 **primary issue to you, that is the potential for**  
12 **chloride contamination of the wells which you**  
13 **use.**  
14 Q. I want to also expand upon that point. Is it  
15 true, am I -- am I correct in my limited  
16 knowledge of water law and hydrogeology, or  
17 whatever the terminology would be, that it's  
18 possible for a contaminant such as arsenic to be  
19 locked in the clay layers, is that a  
20 possibility?  
21 **A. Yes, it -- it has happened.**  
22 Q. So in other words, is it also possible that if  
23 we lower the water level below the current  
24 minimum index level, is it possible that some of  
25 those arsenics and some of those other

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1 contaminants would be released out of those clay  
 2 layers and into the aquifer, is that possible?  
 3 **A. I -- I think the reason why it's locked in the**  
 4 **clay layers is -- is a chemical situation, so**  
 5 **I'm not sure dewatering them would necessarily**  
 6 **cause them to move out of that clay. They're --**  
 7 **they're somewhat concentrated as a natural**  
 8 **process, and I'm not specifically sure that --**  
 9 **whether the water involved would leach it out**  
 10 **or -- or leave it in place. So the fact that**  
 11 **it's combined with clay, it would tend to -- I**  
 12 **would say it would tend to be fairly stable**  
 13 **location, but a geologist might tell you**  
 14 **differently.**  
 15 Q. Well, let me ask you this: I mean, arsenic, if  
 16 it leaches into our water supply, you know,  
 17 that's even a greater concern than having, in  
 18 some ways, than having salty water? I  
 19 understand that salty water will kill crops and  
 20 that's a big concern, I'm not minimizing it, but  
 21 having arsenic leach into our water supply, I  
 22 mean, that's something that could be life or  
 23 death as we actually consume the water as  
 24 humans; is that right?  
 25 **A. It -- it could because arsenic tends to be a**

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1 **poison that you accumulate over time, you don't**  
 2 **just flush it out of your system. So it can**  
 3 **build into a problem.**  
 4 Q. And so let me ask you this: There -- there's  
 5 arsenics known to be locked in the clays of the  
 6 Equus Beds Aquifer, correct?  
 7 **A. Yes.**  
 8 Q. I don't think anyone expect -- expected you to  
 9 have the burden of proof as to whether or not  
 10 these arsenics would be released -- sorry about  
 11 the feedback. There we go. I don't think  
 12 anyone expected you to analyze whether or not  
 13 these -- these arsenics would be released, but  
 14 is it a true statement that the City of Wichita  
 15 didn't do that analysis or research as it  
 16 relates to their proposal?  
 17 **A. I don't see any reference to arsenic at all in**  
 18 **their proposal.**  
 19 Q. And, in fact, there's no reference to any other  
 20 contaminants in their proposal beyond what I've  
 21 already mentioned, chlorides and arsenic. Is  
 22 that a true statement?  
 23 **A. Yes.**  
 24 Q. And so given that some of these contaminants  
 25 such as arsenic could be -- have a drastic

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1 impact on our public health, in all your  
 2 experience having worked for the Division of  
 3 Water Resources, do you think that's  
 4 something -- those water quality issues and  
 5 those water quality metrics are something the  
 6 City of Wichita should look into as they're  
 7 impacted by the City's proposal?  
 8 **A. I think that would have to be examined to see**  
 9 **what those effects could be. It, of course,**  
 10 **depends on location and -- and some things like**  
 11 **that, but, yes, it should at least be looked at**  
 12 **to see if they -- their new operation or their**  
 13 **operation affects that movement of that**  
 14 **contaminant.**  
 15 **MR. STUCKY:** No further questions.  
 16 **PRESIDING OFFICER:** Thank you.  
 17 Ms. Wendling.  
 18 **MS. WENDLING:** I have no further  
 19 questions.  
 20 **PRESIDING OFFICER:** Okay. Are there  
 21 any further questions for Mr. Austin while  
 22 he is testifying?  
 23 **MR. MCLEOD:** I have a couple  
 24 follow-up questions I would like to ask  
 25 him.

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1 **MR. STUCKY:** Just very quickly for  
 2 the record, because Ms. Wendling -- this is  
 3 Ms. Wendling's witness and she didn't do  
 4 any further direct of this witness, any  
 5 redirect of this witness, are we allowing  
 6 for further cross? And I guess I'm just  
 7 going to object to further cross on that  
 8 basis and lodge an objection in that  
 9 regard.  
 10 **PRESIDING OFFICER:** That's a fair  
 11 question, and I don't think with any of our  
 12 witnesses we've quite had this sequence of  
 13 events. But, again, in the interest of a  
 14 full record and what may be helpful to me,  
 15 then I will allow Mr. McLeod to proceed in  
 16 a reasonable vein. So -- and, Mr. McLeod,  
 17 it's also a little hard to hear you, so  
 18 please keep that in mind.  
 19 **MR. MCLEOD:** Thank you.  
 20  
 21 CROSS-EXAMINATION (Cont.)  
 22 **BY MR. MCLEOD:**  
 23 Q. Mr. Austin, in -- in terms of the City pumping  
 24 out large quantities of credits that would  
 25 affect minimum desirable streamflow potentially,

1 I think there was some -- some reference by  
2 counsel to there being an 18,000 acre-foot limit  
3 on annual withdrawal of credits under the  
4 current permits, which would still be the annual  
5 limit on withdrawal under the new permit. And  
6 did you understand that to be the case from  
7 hearing testimony of prior witnesses in this  
8 matter?  
9 **A. I understood that that limitation existed in**  
10 **either case.**  
11 Q. And if that were a concern for minimum desirable  
12 streamflow, should that not have been a concern  
13 investigated by DWR in the permitting process  
14 for ASR I and II?  
15 **A. Well, as I stated, it is not a concern to me**  
16 **that the existing index level, I think that**  
17 **index level tended to address the issue of**  
18 **excessive diversions, but if the -- the new**  
19 **proposal would mean that the 18,000 would be**  
20 **drawn even below the existing index level, then**  
21 **I think it does have a poten -- a much greater**  
22 **potential for affecting MDS.**  
23 Q. And so I want to follow up, then, with this  
24 question: Do you understand, Mr. Austin, that  
25 the 1993 index level only applies as a limit to

1 **still sitting in there.**  
2 **MR. MCLEOD:** I don't have further  
3 questions.  
4 **PRESIDING OFFICER:** Any other  
5 follow-ups?  
6 **MR. STUCKY:** No, none for the  
7 District.  
8 **PRESIDING OFFICER:** Hearing none,  
9 Mr. Austin, thank you, and you are excused.  
10 **A. Thank you, Your Honor.**  
11 **PRESIDING OFFICER:** And,  
12 Ms. Wendling, your next witness?  
13 **MS. WENDLING:** We call Richard  
14 Basore.  
15 **PRESIDING OFFICER:** We'll go off the  
16 record for just a moment.  
17 (Discussion held off the record.)  
18 **PRESIDING OFFICER:** Okay. We are  
19 back on the record and, Ms. Wendling -- oh,  
20 I think we need to swear in our new  
21 witness.  
22  
23 RICHARD BASORE,  
24 having been first duly sworn, was  
25 examined and testified as follows:

1 withdrawal of credits, that is that the City  
2 could withdraw its 40,000 acre-feet year after  
3 year after year, and if it went below that 1993  
4 index level, there would be no trigger that  
5 would stop the City from exercising its native  
6 rights below that level?  
7 **A. I understand that the index level was -- was set**  
8 **as being the floor of where the credits could be**  
9 **applied, and that -- that the proposal of**  
10 **lowering that flow, you would have much greater**  
11 **index -- a much lower index level that would**  
12 **affect MDS and also would allow the pumping of**  
13 **credits. What you do with your native right, I**  
14 **think that's between you and the Division of**  
15 **Water Resources and other water users in the**  
16 **Equus Beds.**  
17 Q. I guess what I'm getting at, Mr. Austin, is if  
18 pumping below the 1993 index level would  
19 adversely affect minimum desirable streamflow,  
20 isn't that true already under the City's  
21 40,000 dollar (sic) acre-feet native right  
22 permit?  
23 **A. I presume so. I also don't know whether at some**  
24 **point that would trigger MDS administration by**  
25 **the Division of Water Resources, 'cause that's**

1 **DIRECT EXAMINATION**  
2 **BY MS. WENDLING:**  
3 Q. All right. Will you state your name for the  
4 record?  
5 **A. Richard Basore, that's B-A-S-O-R-E.**  
6 Q. And I'll direct you to the Intervenors'  
7 notebook, tab 26.  
8 **A. I'm sorry, which --**  
9 Q. That one you have your hand on. Yep.  
10 **A. Okay. Did you say 26?**  
11 Q. Yeah, should be the very last document.  
12 **A. Okay. Yes.**  
13 Q. All right. And will you tell us what that  
14 document is?  
15 **A. Pardon?**  
16 Q. Can you tell us what that document is?  
17 **A. It is a resume of myself.**  
18 Q. Okay. Will you go ahead and tell us a little  
19 bit about your background and work experience?  
20 **A. Sure.**  
21 (Discussion held off the record.)  
22 **A. Yes, that is essentially my resume. I am a**  
23 **lifetime resident of the Equus Beds, fourth**  
24 **generation living in the Equus Beds, if you**  
25 **will. Been around water issues my entire life,**

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1 'cause living three-quarters of a mile from the  
 2 river that floods on occasion, you grow up  
 3 understanding that water is a part of your life  
 4 for good and sometimes for not so much good.  
 5 Was a full-time farmer, rancher, and  
 6 irrigator after I finished college for -- well,  
 7 1967 to 1992. I own four water rights for  
 8 irrigation, the first one from about 1977, and  
 9 we currently utilize five pivots. Currently  
 10 have three domestic wells and two livestock  
 11 wells, or two of them are livestock.  
 12 Served on the county conservation district  
 13 as a board member, I've been on and off of the  
 14 Eagle Drainage District board, which is a --  
 15 well, today would be considered a storm water  
 16 utility, but when it was created in 1950 was a  
 17 drainage district. It covers 30,000 acres in  
 18 northwest Sedgwick County, into Reno and Harvey  
 19 County, and we have about 19 mile of river levy  
 20 and currently serve as chairman of that again.  
 21 Been a longtime member of the Wichita  
 22 Chamber of Commerce water resources, now  
 23 environmental resources committee, and actually  
 24 am probably the longest serving member on that  
 25 committee. Involved with Wichita State's

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1 Economic Development & Research Center for a  
 2 long, long time, since 1986. Served on various  
 3 local boards of -- of Farm Bureau Wheat Growers  
 4 Co-Ops, et cetera.  
 5 I'm a past member of the Old Cowtown Museum  
 6 board in Wichita where I served for ten years  
 7 and a couple years as chairman of it. And I'm  
 8 probably the lead person that was responsible  
 9 for them getting ahold of the old Bentley wooden  
 10 grain elevator before it was demolished by the  
 11 railroad and getting it moved to Cowtown and  
 12 reconstructed to where it's the -- people can  
 13 understand the only working, vintage, wooden  
 14 grain elevator in a museum setting in the United  
 15 States, where you can actually see grain loaded  
 16 and unloaded as it was back in the day.  
 17 Was a member of the initial class of  
 18 Wichita Chamber of Commerce Leadership Wichita  
 19 Program, I was Leadership Kansas, 1985, and am a  
 20 35-year member of the Downtown Rotary Club.  
 21 And after a career of farming and ranching,  
 22 I moved on. Had kids ready for college and a  
 23 father whose health was beginning to  
 24 deteriorate, so took a job with Intrust Bank in  
 25 Wichita as assistant vice-president in the trust

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1 department and was responsible for all of the  
 2 management activities related to all the real  
 3 estate properties held in all the trust accounts  
 4 that the bank was trustee for, which meant we  
 5 had hundreds of houses, we had people who had  
 6 their granddad's farm in Sumner County, I dealt  
 7 with little shotgun houses in very bad  
 8 neighborhoods, I dealt with empty cemetery lots,  
 9 I dealt with 35,000-acre ranches in Oklahoma,  
 10 million dollar houses, was responsible for all  
 11 of the farm leasing and oil and mineral and gas  
 12 leasing on all rural properties, negotiation of  
 13 those terms, had commercial properties, ended up  
 14 having to do -- there was an incident in  
 15 California in the early '90s where the Bank of  
 16 America got stuck with, like, a million dollar  
 17 cleanup bill from the EPA because they were a  
 18 long-term trustee on a ranch that turned out to  
 19 have a very specific pollution problem. And  
 20 that went through the financial world, and so  
 21 they backed off and said we're not taking --  
 22 banks everywhere refused to take any properties  
 23 in trust without a Phase I environmental  
 24 investigation.  
 25 And that became one of my duties was to

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1 investigate any property that was coming into  
 2 trust to see if it had environmental risks that  
 3 were not acceptable. As a result of that same  
 4 thing, we reviewed all the trust accounts that  
 5 existed, and I found myself dealing with  
 6 abandoned gas stations, with dry cleaners, with  
 7 industrial properties that had various aspects  
 8 to them.  
 9 At the same time, the downtown area had  
 10 suffered economically very bad because of the  
 11 flight to the suburbs of downtown businesses, of  
 12 professional people, lawyers, doctors,  
 13 accountants and everybody had moved to the big  
 14 shopping centers, they had moved out on Rock  
 15 Road, and downtown real estate was in very dire  
 16 straits. And then the financial institutions  
 17 looked around and said, we're not doing any  
 18 mortgages, any loans, you can't buy land in  
 19 downtown Wichita, we're not going to loan you  
 20 money to do real estate improvement, and it  
 21 killed the real estate market.  
 22 The City, with some vision, looked at that  
 23 and said, all right, here's the deal. They were  
 24 dealing with the Gilbert and Mosley downtown  
 25 pollution plume, mainly attributable to the

1 Coleman Company and several other associated  
2 industrial users, and that if you could  
3 demonstrate that the property that you held was  
4 not a potential responsible party, the City  
5 would issue a certificate of release from the  
6 liability for that cleanup, and the banks and  
7 financial institutions agreed that if you had a  
8 certificate of release, they would then make the  
9 property eligible for mortgages, loans, and  
10 improvements.

11 And so a part of my job at the bank was I  
12 had to investigate, do Phase I investigations  
13 and demonstrate the properties were not a  
14 potential party. And I think I did that on 35  
15 different properties and got certificates of  
16 release and went through the work on several  
17 more properties that ended up not being eligible  
18 for a certificate of release.

19 So I was dealing with the downtown plume  
20 and having to understand how all that stuff  
21 works, having already had an understanding  
22 somewhat from growing up over the Equus Beds and  
23 understanding the strata, going to the sandpit  
24 as a kid, and you can look at the shear wall on  
25 the sandpit and you were looking at a cross

1 sources do not have permits, for the most part.  
2 Exceptions to that is construction storm water  
3 activities have to have a permit, and usually  
4 your on-site septic systems and private water  
5 wells need a permit from the county level. So I  
6 dealt in that world. A lot of it was education,  
7 a lot of it was outreach since I didn't have the  
8 power of regulation to entice people to be doing  
9 the right thing.

10 I ended up doing a wide variety of work.  
11 When I first took the job, I had 64 counties in  
12 the state; the south half of the state was my  
13 territory. That later changed when we hired  
14 some additional people, and I ended up with 26  
15 counties in south central and southeast Kansas.  
16 I had the lower half of the Ark River basin, I  
17 had all the Walnut, all the Verdigris, and the  
18 lower half of Neosho. So from south central  
19 Kansas to the Missouri line, I was responsible  
20 for dealing with all the county codes, dealing  
21 with storm water construction complaints, and  
22 anything else that came my way.

23 I was a bit of a generalist, and as a  
24 result of that, I had a friend in California a  
25 number of years ago who asked me what I really

1 section of the soil, and when you look at the  
2 water, you knew you were looking at the top of  
3 the groundwater, the Equus Beds. So I was  
4 familiar with that.

5 I did that for ten years, and then I moved  
6 on to Kansas Department of Health and  
7 Environment where I was assigned a role  
8 specifically to look at nonpoint source water  
9 pollution, and in the world of water pollution,  
10 or even air pollution, there's two kinds,  
11 there's point source, meaning you can go  
12 actually point to the pipe it's coming out of,  
13 out of a factory, out of a city sewer plant, out  
14 of a feedlot. But the world of nonpoint source  
15 is what's generated -- this pollution that's  
16 generated all around us in our everyday  
17 activities, fertilizer running off a farm field,  
18 fertilizer running off your yard, leaking septic  
19 systems, construction storm water, dirt  
20 sediment, if you will.

21 And so I was tasked in working in that  
22 world of nonpoint source, which point sources of  
23 pollution have to have a permit from the State  
24 or the EPA, and it regulates how much they can  
25 release in the form of pollutants. Nonpoint

1 did, and I said, I guess I'm the guy at the end  
2 of the hall, because they would come in with a  
3 question or a complaint or an issue, and the  
4 district administrator would look at it and say,  
5 well, it really doesn't quite fit public water  
6 wastewater, doesn't really quite fit confined  
7 animal feeding, it doesn't really quite fit  
8 solid waste, it doesn't really quite fit the  
9 environmental remediation and spills, it's got  
10 several different aspects; and my office was the  
11 end of the hall, I was the last one they'd get  
12 to, and they'd say, Basore, can you figure this  
13 out? So ask me what I did, it's whatever they  
14 handed me is what I did.

15 I ended up working with EPA, with the Corps  
16 of Engineers, with extension service, with DWR.  
17 I had a good relationship with the DWR district  
18 engineer out of the Stafford office, and we  
19 worked together often on dredge and fill  
20 permits, on complaints on drainage issues and  
21 that sort of thing. Worked a lot with  
22 conservation districts, with the water office.

23 I was tasked with working with county  
24 sanitary codes and private water wells and  
25 having to understand the influence of one upon

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1 the other. And one of the things you learn in  
 2 there is that people in the country are  
 3 basically on a septic system. 25 percent of  
 4 Kansans live and exist with a private well and a  
 5 private septic system. In southeast Kansas,  
 6 they tend to be lagoons because the clay is so  
 7 heavy that it will not let water percolate.  
 8 And a septic system works on the principle  
 9 that the effluent coming out of the septic tank  
 10 goes out into lateral lines with holes in them,  
 11 and that water then percolates down through the  
 12 soil, and the air spaces in the soil hold  
 13 aerobic bacteria and other protozoa and all  
 14 sorts of biota in there that will break down the  
 15 organic matter into its basic nitrogen,  
 16 phosphorous, make it available to the plant  
 17 roots, but they will also kill the pathogens.  
 18 And so if you have a good 3-foot layer of soil  
 19 under your lateral lines at the time the water  
 20 has percolated through it, given some time, some  
 21 hang time in there, the water coming out the  
 22 bottom is really fairly acceptable. You  
 23 wouldn't drink it, but it's been purified a  
 24 great deal, and if you're above the water table,  
 25 the water then goes back into the water table.

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1 The national association for companies and  
 2 people involved with -- with septic systems,  
 3 it's called the National On-Site Recycle  
 4 Association, because in point of fact water  
 5 coming out of a septic tank gets recycled. So  
 6 when you flush a toilet out here somewhere in  
 7 the Equus Beds, it's going in the septic system,  
 8 it's going to end up back in the Equus Beds;  
 9 when you flush a toilet in Wichita, it goes to a  
 10 sewer plant, goes into the river, and it heads  
 11 for Oklahoma. So it is being recycled. And so  
 12 I did a lot of work and training in that.  
 13 I did soil profile work. You dig a trench  
 14 5 feet deep and you get in there and you look at  
 15 the layer cake of the soil, and you figure out  
 16 what is the most restrictive layer to  
 17 percolation; and that could be a clay lens, it  
 18 could be caliche, it could be changes in the  
 19 absorptive rate of the different levels of  
 20 material and strata. In my own personal case,  
 21 living down here three-quarters of a mile from  
 22 the river, it's a high water table is my  
 23 restrictive layer because it's hard to always  
 24 guarantee 3 feet of separation from the top of  
 25 the groundwater.

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1 So in those cases where there is a problem,  
 2 there are some much more expensive,  
 3 sophisticated, enhanced wastewater treatment  
 4 systems that can be utilized. In my case, we  
 5 went on top of the ground, put chambers on  
 6 there, covered them up with dirt, and I have a  
 7 pump tank that pumps the effluent up out of the  
 8 septic tank and distributes it at ground level,  
 9 which then gives you a chance to have that  
 10 3 feet of separation before you hit the high  
 11 water table. So I did a lot of education in  
 12 that way.  
 13 Taught classes in it, I responded a lot to  
 14 complaints on spills. I was the first  
 15 inspector, if you will, for KDHE on site at the  
 16 big Barton Solvent plant in Valley Center ten  
 17 years ago or so when it exploded into fire. And  
 18 it was one of those multifaceted things that  
 19 they evacuated part of the town because of air  
 20 quality, the runoff from all of the firefighting  
 21 and the chemicals they used ran off into the  
 22 City sewer treatment plant, put it out of kilter  
 23 and knocked it offline and then ran into Little  
 24 Arkansas River and everybody was worrying about  
 25 a fish kill. So I ended up out there, and it

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1 had to do with air quality, it had to do with  
 2 the municipal sewer system, and it had to do  
 3 with the, you know, fish kill in the river. So,  
 4 again, one of those multifaceted things that  
 5 you -- you learn to deal with.  
 6 I dealt with train wrecks, trash truck  
 7 wrecks, fertilizer spills, drainage complaints  
 8 coming in from DWR where one of the tenets  
 9 underlying Kansas water law tends to be that you  
 10 can't withhold water from a neighbor who wants  
 11 it and may need it to water livestock, or  
 12 something, but you can't also change your land  
 13 surface around to where you're flooding your  
 14 neighbor downstream with water that he doesn't  
 15 want. So those issues we kind of had to deal  
 16 with.  
 17 In 2011, I was the lead inspector sampler,  
 18 if you will, for the harmful blue-green algae  
 19 blooms that were occurring in area lakes and  
 20 reservoirs. We started inspecting in first of  
 21 April, and we weren't through till October due  
 22 to the drought conditions. And I probably  
 23 inspected Cheney Lake a dozen times, 15, 20  
 24 times. Every Monday we were on the road  
 25 inspecting any number of locations and then

1 advising folks on the safety and the problems  
2 that were occurring in the stream or in the lake  
3 regarding those algae blooms. And the problem,  
4 of course, is the blue-green algae -- there's  
5 lots of algae that occur in everything. A city  
6 wastewater lagoon is supposed to be green  
7 because it has good algae in it to digest all  
8 sewage material, but the blue-green stuff that  
9 looks like the old Bell telephone trucks or the  
10 bottom half of your grade school hallway wall,  
11 that sagey green, it smells bad, looks bad, and  
12 is bad because that algae produces a neurotoxin,  
13 and it will make you sick and it will kill your  
14 dog in about ten minutes. So when they post a  
15 lake for algae to stay out of it, they mean what  
16 they say.

17 I did a lot of inspection on construction  
18 storm water, everything from single houses to  
19 large housing developments, from Wal-Marts to I  
20 was the environmental inspector on the south  
21 half of the Keystone Pipeline when it was built  
22 through Kansas, and I inspected from Marion  
23 County to the Oklahoma line two or three times.  
24 And I can't tell you how it's operated, but I  
25 can tell you it was built with every possible

1 consideration for protecting the environment,  
2 which was interesting because technically under  
3 the Clean Water Act, petroleum and agriculture  
4 has an exclusion, and since this is a petroleum  
5 type thing and they technically didn't have to  
6 have an EPA or a state construction storm water  
7 permit, but they went over and above, literally,  
8 every requirement that they would have had if  
9 they had to have a permit. They bored under  
10 every wetlands, under every road, railroad,  
11 creek, and -- and had two wildlife specialists  
12 on the job every day on top of their  
13 environmental people. So I got to see and do a  
14 lot of interesting things.

15 I was a -- was not the lead inspector but I  
16 was -- helped out the district water engineer.  
17 And the Wichita district had nine counties; even  
18 though my territory was 26, it included the nine  
19 of the Wichita district office, and I often  
20 helped out the lead water engineer in the  
21 Wichita office doing his inspections on public  
22 water treatment plants, public sewage treatment  
23 plants, industrial storm water permit holders,  
24 so helped him inspect, you know, concrete  
25 plants, sewer -- sewer plants, water plants,

1 including helped him inspect Cheney Lake when  
2 the City of Wichita put in their ozone treatment  
3 plant out there to clean up the taste and odor  
4 issues they were getting from Cheney Lake to  
5 make the water more palatable. It was not a  
6 health or safety issue, strictly an aesthetic  
7 one.  
8 Helped him do the -- a couple of different  
9 inspections on the ASR treatment plant when it  
10 was under construction and put into operation.  
11 I performed the construction storm water  
12 inspection permit on the river intake for the  
13 ASR plant near Sedgwick. So did a lot of that.  
14 I was also very involved with what is  
15 called WRAPS, the Watershed Restoration and  
16 Protection Strategies, through KDHE, which these  
17 are generally locally generated interests by  
18 people wanting to clean up their watershed and  
19 remove pollutants and diminish pollutants in it,  
20 and mainly it's sediment. The biggest sediment  
21 in the United -- the biggest pollutant in the  
22 United States in watercourses is sediment. It's  
23 not a health and safety issue, but it is a water  
24 quality issue nonetheless, and there are cities  
25 and towns who have -- their public water supply

1 intakes are on streams and lakes and they have  
2 to spend a lot of money removing sediment  
3 sometimes in order to get potable water.  
4 And so worked with up to 30 of those over  
5 the years. One of them that I worked with  
6 considerable was the Little Ark WRAPS, which is  
7 in Harvey County and a little bit into Marion  
8 County north of Wichita. Was put together by  
9 locals. It is, in fact, partly -- it receives  
10 some subsidy money from the City of Wichita  
11 because one of its objectives early on and  
12 always has been is the removal or diminution of  
13 the use of atrazine that shows up in the water  
14 column of the Little River at the water intake  
15 site for the ASR. And this improves the ASR's  
16 ability to put potable water back into the  
17 aquifer when they -- when they are activating  
18 and using the ASR facility.  
19 So -- and in working with that, I was also  
20 serving on the city-county technical advisory  
21 committee to rewrite local construction storm  
22 water permit ordinances, and that morphed into  
23 them creating a -- basically a city technical  
24 advisory committee for storm water advisory  
25 board it's called, and I was appointed to that

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1 and served on it until my retirement and was one  
 2 of the leaders in getting the K-State extension  
 3 people who run the WRAPS, one of the  
 4 facilitators for the WRAPS project involved to  
 5 where the City saw their way clear to set up a  
 6 new program, an innovative one where people in  
 7 town, say you're doing an acre and a half  
 8 QuikTrip and it's going to be all hard surface  
 9 runoff. Well, you have to have a storm water  
 10 permit and you have to control any sediment that  
 11 might come off of there, and even though it's  
 12 not raw dirt, there were vehicles tracking in  
 13 various pollutants, including dirt and stuff,  
 14 and you may have to put in what's called a  
 15 hydrodynamic separator, which is a great big  
 16 swirl chamber that all the storm water runs  
 17 into, and the solid matter is supposed to kick  
 18 out.  
 19 And it may cost you 25 to \$45,000 to do it  
 20 and you have to maintain it every year. For a  
 21 much lower amount than that, people can  
 22 contribute to this storm water fund in the City,  
 23 get a pass, if you will, in not having to buy  
 24 and install that sort of thing, but they  
 25 generate money that then goes up into the

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1 watershed and supports the farmers installing  
 2 conservation practices that reduce sediment load  
 3 in the river. And the load -- the bang you get  
 4 is about two to one for your buck; you can  
 5 reduce two tons of sediment out in the watershed  
 6 over doing one ton in the city. So that's one  
 7 of the things that I helped work on there as  
 8 well.  
 9 Q. Well, I think that we've got a pretty good  
 10 idea of --  
 11 A. I'm sorry.  
 12 Q. -- the vast amount of your experience.  
 13 A. You took the lid off, I apologize.  
 14 Q. That's okay. I'm going to have you now switch  
 15 to tab number 1 in the same binder, and if you  
 16 flip to the third page of -- under tab 1?  
 17 A. You say the first page?  
 18 Q. The third?  
 19 A. Third. All right.  
 20 Q. Still under the first tab, though. Just stick  
 21 with tab 1 and you'll see the first page is a  
 22 map.  
 23 A. Yes.  
 24 Q. All right. Now flip back a couple pages to  
 25 you'll see a map with your name on it.

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1 A. So the Intervenor's wells in the ASR basin, is  
 2 that the map?  
 3 Q. Correct.  
 4 A. Okay.  
 5 Q. Can you tell us, you mentioned that you have  
 6 multiple water permits but tell us a little bit  
 7 more about how you rely on the Equus Beds.  
 8 A. Well, rely on the Equus Beds for water, I have  
 9 my entire life. Currently, I have four water  
 10 permits that encompass three wells and operate  
 11 five pivots. My first water right, I think was  
 12 in 1977. And a couple more were added about  
 13 1980 or so. So those are definitely reliable.  
 14 I have a -- my domestic well at my house, I have  
 15 a domestic well in my shop, I have two livestock  
 16 wells, one for the barn lots and one for holding  
 17 pens up at the edge of the pasture. So they are  
 18 critical.  
 19 As a young person, before we started doing  
 20 groundwater pits in the pasture because of the  
 21 water table would let us do it for watering  
 22 cattle, we kept eight windmills going with sand  
 23 points and probably had seven or eight -- we had  
 24 some tenant houses that we rented, plus my  
 25 folks' house, my house, and my grandparents'

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1 house and several others that were all on sand  
 2 points. Some were on pitcher pumps and some  
 3 were not. So every year was major maintenance  
 4 on windmills throughout. So I understand water.  
 5 One of the things that we'll talk about  
 6 later is salt intrusion, but my history is that  
 7 in dealing with windmills, the ones close to the  
 8 river always had saltier water, you could taste  
 9 it, as the ones further away, and as time has  
 10 passed, the ones further away have gotten salty  
 11 as well, which tells me the -- the river  
 12 influence of the salt front keeps moving towards  
 13 the well field.  
 14 Q. So if we look at the map on the page -- okay.  
 15 So looking at this map, does this reflect  
 16 generally the location of your wells?  
 17 A. Yes, you can see down in there --  
 18 (Reporter requests clarification  
 19 of the witness.)  
 20 A. Okay? So it's on when it says mute.  
 21 Yes, as you can see, those are my water  
 22 permit numbers there in the lower left-hand  
 23 corner with the arrows pointing to the location  
 24 of where those wells are actually located.  
 25 BY MS. WENDLING:



1 Q. And is this the Arkansas River that we see in  
2 the lower --  
3 **A. Yes, the small blue squiggly line is the Big**  
4 **Arkansas River.**

5 Q. So from an approximate distance, how close are  
6 you to the river?

7 (Reporter requests clarification  
8 of the witness.)

9 **A. Now can you hear me? Okay.**

10 **My water wells are -- three of them are --**  
11 **one is maybe two-thirds of a mile, one is**  
12 **three-fourths of a mile, my house is about**  
13 **three-fourths of a mile, and the one up in**  
14 **square number 32 is probably a mile and a half**  
15 **from the river.**

16 **BY MS. WENDLING:**

17 Q. So in addition to your permit, you also have a  
18 domestic well?

19 **A. I have a domestic well at my house, it's**  
20 **205 feet deep. My folks' house, I've -- I moved**  
21 **a house in in 1968 when I was getting married,**  
22 **bought a house from a neighbor and moved it half**  
23 **a mile and have lived there ever since, which is**  
24 **one-eighth of a mile from my folks' house where**  
25 **I grew up.**

1 **So I've always been on the -- the corner of**  
2 **that quarter section, and, of course, we had a**  
3 **sand point well at my folks' house for a**  
4 **domestic well, I put one down in 1968. About**  
5 **1980, we decided the water quality was so bad we**  
6 **needed to do something better, so we -- we**  
7 **winched it and then drilled a 33-foot, I think**  
8 **it is, well in the back yard. Water was better**  
9 **but still wasn't great, and so in 19 -- I**  
10 **believe it's 1989, we drilled a 205-foot well in**  
11 **the front yard because experience by then had**  
12 **shown on irrigation wells that the deeper you**  
13 **went, the better the odds were for getting**  
14 **better water quality. Even though that seems**  
15 **counterintuitive and -- and from Mr. Austin's**  
16 **testimony and others that the deeper water tends**  
17 **to be saltier, in our case next to the river,**  
18 **the shallow wells tend to be higher in salt**  
19 **content than the deeper ones for -- I'm not**  
20 **enough of a scientist to tell you why, whether**  
21 **it's clay layers and perched water tables or**  
22 **what's going on, but that's a fact.**

23 **So we ended up, you know, paying a fair**  
24 **amount of money deepening and changing water**  
25 **wells domestically. So I have -- still have a**

1 **happen.**

2 **I think with a shovel, I could still find**  
3 **that collar in the front yard if I dug but --**  
4 **and that was an interesting process 'cause as a**  
5 **12 year old, I had a construction company in my**  
6 **front yard every morning during the summer, and**  
7 **being pre-OSHA went out and road on the**  
8 **Caterpillars with the guys and I could ride my**  
9 **24-inch bike through the pipe sections upright**  
10 **without bumping my head. And probably know more**  
11 **about the actual installation and construction**  
12 **of the pipeline and the surge tank west of**  
13 **Bentley than anybody working for the water**  
14 **department in the last 30 years 'cause I was**  
15 **there when it happened. Anyway ...**

16 Q. Do you recall the process of obtaining your  
17 water permits?

18 **A. Okay. Yes. For three of the permits, I filed**  
19 **with -- whatever was the applicable documents in**  
20 **1977 and 1980, which I presume that I had to**  
21 **show a deed to show I had ownership of the land,**  
22 **and then whatever the documents were that were**  
23 **required through Groundwater Management**  
24 **District 2 and/or Division of Water Resources.**  
25 **The third permit I inherited from my father and**

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1 was already established.  
 2 Q. Do you know how the quantity of water was  
 3 determined?  
 4 A. Yes, I think they -- they vary with the permits.  
 5 If you'll give me a second, I may be able to  
 6 release the data on that. All right. Okay. On  
 7 30556, the well's 160 feet deep, and I believe  
 8 it's 136 acre-feet of quality water. 26935 and  
 9 28771 are basically two water rights that apply  
 10 to the same well, and that's 130 acre-feet  
 11 authorized. And the other one is authorized to  
 12 cover 170 acres instead of 135 because there are  
 13 two smaller adjunct pivots tied to it and so it  
 14 has a 240 acre-foot authorized amount.  
 15 Q. So the quantity, the authorized quantity is  
 16 based on the acreage, or is it also based on  
 17 something else?  
 18 A. It's based on the acreage, and as I recall, DWR  
 19 allows you, I could be wrong, but I think it  
 20 was, like, 1 1/2 acre-foot per actual land acre  
 21 of appropriated rights.  
 22 Q. Okay. And does the appropriation depend on the  
 23 use, your use of the water?  
 24 A. Yes. You know, your -- yes, your -- you have to  
 25 put down a point of withdrawal and a place of

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1 use on all water permits, and the amount that is  
 2 quantified through DWR is based on what the  
 3 purpose and use of the water is being  
 4 appropriated for, what beneficial use. If  
 5 you're doing a well for livestock, it's going to  
 6 be calculated entirely differently than if  
 7 you're doing it to irrigate ground that may be  
 8 growing corn.  
 9 Q. And do you know the process if you wanted to  
 10 change the use, say you wanted to go from  
 11 irrigation to livestock?  
 12 A. I know there is a process. I would apply to DWR  
 13 to start with to find out what the local  
 14 regulations and controls might be, but  
 15 ultimately, I think it falls to DWR to  
 16 determine. And I know some of the transitions,  
 17 I think, if you go from agriculture to, like,  
 18 municipal or industrial that you lose part of  
 19 that appropriated water right. You can't  
 20 transfer it acre-foot for acre-foot to a totally  
 21 different use in some cases without a penalty.  
 22 Q. And is your authorized quantity a quantity that  
 23 would be adequate during an eight-year drought?  
 24 A. We hope so. That's one of those questions that  
 25 we haven't really been irrigating in an

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1 eight-year drought out here in the Equus Beds,  
 2 an eight or ten year. We've had two or three  
 3 pretty bad years in a row, but we haven't had  
 4 that extended experience to know.  
 5 And they're implications there that  
 6 presuming it's an eight-year drought that  
 7 everybody, every water user, irrigator,  
 8 municipality, including Wichita, industrial  
 9 people, would be utilizing their full water  
 10 rights, which would, you know, diminish the  
 11 ability of water in the Equus Beds to be there  
 12 for everybody.  
 13 It could impact water quality because of  
 14 the drawdown, and your efficiency may not be  
 15 great. For instance, in 1980, I believe it was,  
 16 we had a record heat wave in the summer; we had  
 17 over 30 days when it was over 100 degrees. When  
 18 you watched the news at night, it would still be  
 19 over 100 degrees at 10:00 o'clock when the news  
 20 came on. I only had one pivot at the time, and  
 21 it was not one of the new efficient ones, it was  
 22 an original water drive, and so I ended up  
 23 trying to keep up with 130 acres of corn running  
 24 at 7/24 for, I think it was almost 60 days  
 25 without shutting it off, unless it broke down or

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1 something. Didn't even change oil in it, I just  
 2 added oil to the motor and kept running.  
 3 At the end of the season, I had 5- to  
 4 6-foot-tall green corn, but it was analyzed by  
 5 the USDA people for disaster, and they  
 6 calculated that it would yield 19 bushels to the  
 7 acre for irrigated corn. I got real lucky in  
 8 that I found a feedlot about eight miles away  
 9 who purchased the entire circle from me and  
 10 chopped it for feed, for ensilage.  
 11 Between the small disaster payment I got  
 12 and the money I got back from selling it to  
 13 ensilage for forage, it was equal to as if I had  
 14 had a 75 bushel acre corn crop in an irrigated  
 15 yield, which is about half of what you would  
 16 hope for at that point in time. So those  
 17 experiences stick with you that, you know, yeah,  
 18 we'd have been a lot better off if we'd had  
 19 wheat growing at that point in time.  
 20 I -- I do remember 1956 being dry, I don't  
 21 recall specifically the river being bone dry. I  
 22 know I have a neighbor who is 97 years old who  
 23 is still sharp as a tack, and he's told me that  
 24 he saw the Big Arkansas River at the Bentley  
 25 Bridge dry three times in his life, in 1936, in

1 1956, and in 2012. And I have no reason to  
2 doubt him.

3 What I do remember about 1956, and it  
4 was -- it was hot and dry, was that really began  
5 the end of anybody in our area growing dryland  
6 corn. It had been a common crop up to that  
7 point, and the yields got so bad in that record  
8 drought of the mid '50s that people went away  
9 from growing corn, and at the same time K-State  
10 was releasing the first varieties of milo, which  
11 was being touted as a more drought-tolerant  
12 alternative crop.

13 And so we really didn't see much corn grown  
14 other than on a few irrigated, you know,  
15 flood-irrigated acres in this area until pivots  
16 arrived in the late '60s, early '70s, and  
17 irrigation really began to take off in the Equus  
18 Beds, and then irrigated corn suddenly showed up  
19 because people had just given up on dryland  
20 corn. So it was a -- a cultural practice change  
21 driven by a drought.

22 Q. Do you recall whether any changes were made  
23 during or following the 2011 and '12 drought?

24 A. Not particularly. I had my land rented, I don't  
25 actively climb on a tractor and farm it myself

1 anymore, but my farm tenant does a good job of  
2 managing, and I think if we are looking -- I  
3 mean, it's hard to forecast; you don't know the  
4 second year of a drought if that's the last year  
5 of the drought or is that two years out of date.  
6 But I'm sure we would have had extensive  
7 conversations if the indications were it was  
8 going to be extended as to what we could do to  
9 help preserve the wells and the water and have  
10 crops that were meaningful, go back to -- get  
11 away from the corn, go back to milo, go back to  
12 wheat, put in, you know, alternative cropping  
13 practices, do more of the no-till cover crop  
14 kinds of operations where you preserve topsoil  
15 moisture and those kind of things. So there are  
16 options out there. No, we didn't do anything  
17 particularly in 2011 and '12, we did not take  
18 advantage of the flex accounts, we didn't feel  
19 like that was -- at that point that that was a  
20 viable alternative.

21 Q. Have you -- do you typically pump your fully  
22 authorized amount, and if you don't pump the  
23 full amount, what happens?

24 A. We typically pump what's reasonable, and that is  
25 not always the fully authorized amount. If we

1 have a dry season and it's irrigated corn, we  
2 may well pump the full amount; but if it's milo  
3 or double crop wheat or soybeans that use less  
4 water, we might not pump at all. If we have a  
5 wet season, as in April, May of 2019 when we had  
6 floods along the river and immense rain events,  
7 we may have pumped a third of our water right  
8 because it was unnecessary.

9 The best irrigation has always been a nice  
10 rain, and anytime you can shut off a diesel  
11 engine, a propane engine, or an electric line  
12 that's running a pivot, save that fuel cost,  
13 save wear and tear on an expensive pump on the  
14 well screen, on the pivot system, you know,  
15 it's -- it's not efficient to water when you  
16 don't need it, it makes no sense, there's a cost  
17 to it; you've got a big investment in it and you  
18 want it to last as long as you can. And you  
19 can't -- you can over-water crops. Corn doesn't  
20 like wet feet; too wet a soil prunes the roots,  
21 and the crop suffers.

22 Q. Do you get a future credit for the water you  
23 leave in the aquifer?

24 A. No, unfortunately, we get no credit at all for  
25 any water left in the aquifer. Farmers and

1 ranchers have been -- well, I don't know whether  
2 you characterize it as actively or passively  
3 recharging the Equus Beds since they first put  
4 plows into the sod in 1870 out here.  
5 Percolation, precipitation has always gone back  
6 into the Equus Beds, still does. If you shut a  
7 pivot down because it's raining, some of that  
8 rainwater will wind its way back into the Equus  
9 Beds even during an irrigation season.

10 Q. What investments have you made in your property  
11 based on the water rights you possess?

12 A. Spent a fair amount of money making holes in the  
13 ground. My leasing situation with my farm  
14 tenant is it's, frankly, a cash rent deal; he  
15 pays for the pump, the motor, and the pivot, and  
16 I pay for the well. I had to replace a well  
17 eight years ago, could have been nine, I had a  
18 well that cavitated and the wellhead subsided  
19 because it had been pumping fine sand 'cause the  
20 screening was not correctly done originally.

21 As I recall, between hiring a hydrologist  
22 engineer to figure out exactly the screening  
23 size and exactly the gravel pack size that was  
24 needed to keep it from further pumping of fine  
25 material and drilling of a whole new well and

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1 getting a permit moved and the old well plugged,  
 2 I think I spent \$25,000. And as I say, that's  
 3 been nine years ago, or whenever, I'm sure the  
 4 price is higher now. So with three wells, I  
 5 figure I'm sitting on a \$75,000 investment in  
 6 effect at the moment. And my house well at  
 7 205 feet was, you know -- it's 50 to \$100 a foot  
 8 to drill a 5-inch well, so it's expensive.  
 9 Q. Now, you've talked about being familiar with the  
 10 Wichita ASR project, are you familiar with the  
 11 basin storage area?  
 12 A. Yes, I understand the concept.  
 13 Q. Where is the basin storage area?  
 14 A. Well, by definition, it has to be in the  
 15 unsaturated portion of the aquifer because  
 16 there's no place else to put water for basin  
 17 storage.  
 18 Q. And where is that in relation to the land where  
 19 you live and farm?  
 20 A. Well, it would have to be whatever the depth  
 21 from basically ground surface is to the static  
 22 water table located around each well.  
 23 Q. Do you have any concerns if the basin storage  
 24 area is expanded?  
 25 A. By expanded, do you mean horizontally or

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1 vertically?  
 2 Q. Either one but we'll talk vertically?  
 3 A. Okay. Am I good?  
 4 THE REPORTER: Uh-huh.  
 5 A. To expand it horizontally is probably not an  
 6 issue. To artificially expand it vertically  
 7 gets into the main reason that I'm involved as  
 8 an intervenor, and that is I am highly concerned  
 9 about the saltwater intrusion coming from the  
 10 Big Arkansas River into the Equus Beds and under  
 11 my land and affecting the quality of the water  
 12 that's available to me both irrigation and  
 13 domestically. As I indicated earlier,  
 14 experience with windmills for decades was that  
 15 the ones closest to the river were the saltiest  
 16 and the ones further away were less so.  
 17 My pivot that was running in 1980, what we  
 18 found out in 1985 was suddenly the soybeans  
 19 didn't look healthy. And I had ServiTech crop  
 20 advisers, and I asked them what was going on, we  
 21 were -- I was suspicious of herbicide  
 22 carry-over, I was suspicious of some fungal  
 23 soybean disease or some such, and they looked at  
 24 it and analyzed and said, you got salt burn from  
 25 the irrigation water from the overhead

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1 sprinklers. So the water in that pivot had gone  
 2 from being usable for soybeans to unusable for  
 3 soybeans without crop damage over a period of  
 4 five or six years, which told me the salt front  
 5 had moved, in effect.  
 6 We then went back for a period of years to  
 7 not putting soybeans in the rotation, corn,  
 8 milo, and wheat which were more tolerant, and  
 9 then eventually put in a new well. That was a  
 10 shallow well, was 35 deep, I think; we went to  
 11 175 feet, or whatever it is currently, and the  
 12 water quality is much better.  
 13 BY MS. WENDLING:  
 14 Q. So one of the components of the City's proposal  
 15 is lowering those minimum index levels, which  
 16 could be as you talked about an expansion of the  
 17 basin storage area. Are there additional  
 18 concerns that have not been addressed by  
 19 testimony so far that you have regarding the  
 20 lowering of the index wells? Or the potential  
 21 to draw down water to lower index levels?  
 22 A. Yeah, I have a concern. I mean, I've got one  
 23 domestic well out in the shop that's only  
 24 probably 15 feet with a sand point, which means  
 25 that well might have to be replaced and

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1 deepened, or whatever. But for the irrigation  
 2 well, and given my location that close to the  
 3 river, I'm on the front line of the movement of  
 4 the salt front. And -- and my understanding of  
 5 geohydrology is when you have a cone of  
 6 depression, if you will, around the Wichita well  
 7 field of some 15 miles in diameter and they  
 8 increase the pumpage out of that, it's going to  
 9 increase that hydraulic gradient and speed up  
 10 the movement of that salt front towards the well  
 11 field, which I understand could impact the well  
 12 owners there, but it brings the salt under me  
 13 first, I'm on the front line to have to deal  
 14 with it.  
 15 And -- and, ultimately, the worry would be  
 16 that we get over that 300, 350 parts of salinity  
 17 that makes the water really almost unusable for  
 18 irrigation, or very much irrigation depending on  
 19 the crop that you're dealing with. And there's  
 20 places in California where they have continued  
 21 to irrigate with much higher salinity levels and  
 22 have basically ruined their land. The salt is  
 23 visible on it, and they've basically lost the  
 24 ability to do any farming.  
 25 If the water becomes uneconomically usable

1 because of a high salt content, then you  
2 basically go back to a dryland value for your  
3 property, and that could mean a third to a half  
4 loss of property value for what you own, plus  
5 your water right would become of extremely  
6 limited value. Unless there was some way to  
7 transfer it far enough away to somebody but --  
8 so that would -- that would have a serious  
9 impact on the economic viability of our  
10 operation and -- and those around us up and down  
11 the river.

12 The information I have seen indicates that  
13 the Big Arkansas River stream reach between  
14 Yoder and Maize Road is a losing reach, meaning  
15 the river at Maize has less cubic feet per  
16 second than the river does at -- at the Haven  
17 bridge or Yoder, meaning it's being absorbed  
18 into the bank and into the Equus Beds Aquifer  
19 that goes by. And anything you do to increase  
20 the gradient into a well field, whether it's  
21 Wichita or irrigation, is going to make that  
22 even worse.

23 That stretch of river has a HUC number and  
24 it's on the Kansas -- Kansas Department of  
25 Health and Environment, what's called the 303(d)

1 of the subterranean rock and stuff.  
2 So my concern is not actually running out  
3 of water, I'm not going to be impacted in that  
4 near as much as the folks near to the well field  
5 where a lot of withdrawal might be taking place.  
6 My concern is that if there's a lot of  
7 withdrawal taking place, it's going to  
8 exacerbate that salt front moving in, and as I  
9 used to tell folks when I worked for KDHE, the  
10 only thing worse than bad water quality is no  
11 water at all.

12 Q. I'd like to have you find District Exhibit  
13 Number 68, which is Dave Romero's expert report,  
14 so we might need to -- I think the District's  
15 binders have the numbers on the front.

16 A. Thank you.

17 Q. Uh-huh. So if you flip to the very last page of  
18 Mr. Romero's report, there is a map.

19 A. The very last page of the whole booklet?

20 Q. No, of -- of Exhibit 68, which is  
21 Mr. Romero's --

22 A. Okay.

23 Q. -- expert report. So you're -- you're on his --  
24 you were on it. Maybe I had the wrong number  
25 but that's his expert report and the last page

1 list, which is under the Clean Water Act, which  
2 sets out states have to survey all the streams  
3 in their state every few years and quantify the  
4 water quality, is it over or below acceptable  
5 average, and that reach is being called out for  
6 being over-polluted with phosphorous, selenium,  
7 and, of course, salinity through its entire  
8 reach.

9 Q. In the City's proposal where they show the  
10 proposed minimum -- minimum index levels, adding  
11 in the 10-foot contingency, in some of those  
12 figures, they show -- they have a map showing  
13 the remaining saturated thickness. So based on  
14 your water quality concerns that you've  
15 expressed, does the remaining saturated  
16 thickness give you any confidence that the  
17 proposed modifications will not cause you harm?

18 A. My worry really is not that I will run out of  
19 water. My wells are -- in particular, like my  
20 house domestic well of 205 feet sits at the very  
21 bottom of the deepest end of the Equus Beds  
22 bathtub. If I get down to where I've only got  
23 25 feet of saturated thickness left in my house  
24 well, the entire upper half of the Equus Beds is  
25 going to be dry in reality because of the slope

1 should be a map.

2 A. This the map you're talking about, that's on 69?

3 Q. It is figure 8 of his report, looks like --

4 A. Figure 27.

5 Q. No, it's -- the bottom of it, you were there, it  
6 says adapted USGS figure 27, Klager and others,  
7 figure 8.

8 A. Is that the USGS figure 27, Klager and others  
9 2014?

10 Q. Yes.

11 A. Okay.

12 Q. So this -- during Mr. Romero's testimony, he  
13 describes this map, and you can see from the key  
14 on the lower right the colored lines represent  
15 various pumping scenarios. Can you tell based  
16 on this which color lines would impact the area  
17 where your wells are? Note that the IW numbers  
18 correlate to the index cells, so your wells are  
19 in index cells 32 and 35, if that helps you find  
20 where you are on this map.

21 A. Yes, I can see, and mine, in particular, would  
22 be in 35 where it shows the direct impact.

23 Q. And so the colored lines representing potential  
24 chloride movement, which colors would  
25 potentially come into 35? Assuming the colors

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1 are coming from the river --  
 2 **A. Well, if -- I mean, they -- they are all really**  
 3 **beyond my wells, so the chloride is already**  
 4 **there underneath me. That -- to me, this map**  
 5 **just represents how far north into the well**  
 6 **field or into the Equus Beds the salt front**  
 7 **would be moving under those various scenarios,**  
 8 **and they're already past me. Regardless of the**  
 9 **pumping scenario, I'm impacted.**  
 10 **Q. Has the testimony you've heard so far during**  
 11 **these hearings informed you of how you might be**  
 12 **impacted should the City withdraw their 100 --**  
 13 **up to 120,000 acre-feet in maintenance credits?**  
 14 **A. Not really. In my view, this -- these hearings**  
 15 **have not demonstrated from the City or from DWR**  
 16 **much study regarding the salt front intrusions**  
 17 **in either Burrton or along the Big Arkansas**  
 18 **River, which I find fault with the -- with the**  
 19 **proposal and actually surprised that DWR would**  
 20 **sort of give it its approval, if you will,**  
 21 **without having that sort of information**  
 22 **involved.**  
 23 **I am -- if I may, if I can find it. One of**  
 24 **the things that bothered me was -- was in our**  
 25 **looking through various exhibits as we were**

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1 **preparing for this Intervenor and the City of**  
 2 **Wichita's response to the Intervenor's first set**  
 3 **of interrogatories is, I think is number 24,**  
 4 **Exhibit 18, I just have a part of that in front**  
 5 **of me, but it says, quote, neither such a**  
 6 **withdrawal nor the impact on chloride migration**  
 7 **was modeled as a part of the City's proposal**  
 8 **because such an event is not contemplated by the**  
 9 **City's proposal.**  
 10 **So how could you be doing this proposal and**  
 11 **not contemplate the impact of the salt intrusion**  
 12 **that you know is there and would have impact,**  
 13 **you know, on -- on the Equus Beds? I mean, not**  
 14 **to be facetious, but it almost sounds a little**  
 15 **bit like the marine engineers talking to the**  
 16 **White Star Line folks in 1911 saying, you don't**  
 17 **need more than 16 lifeboats on the Titanic**  
 18 **because we don't contemplate that you'll ever**  
 19 **need them.**  
 20 **You know, it's just -- it's a failure to**  
 21 **have a complete proposal, in my view, because**  
 22 **it's a -- it's an impact both on the upper end**  
 23 **near Burrton and -- and from the bottom end**  
 24 **along the Big Arkansas River. I mean, the --**  
 25 **the City may be able to ignore, if you will, the**

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1 **intrusion of the salt fronts because they can**  
 2 **pump semi-salty water, salty water to Wichita,**  
 3 **blend it with Cheney water, and still come out**  
 4 **with a potable, usable water. They do it with**  
 5 **the Bentley well field water now, and there's**  
 6 **other waters that are questionable that they can**  
 7 **use and blend, but we have no alternative. I**  
 8 **don't have another water source; if my water**  
 9 **under my land gets so salty I can't use it, I'm**  
 10 **lost.**  
 11 **And, you know, it could -- you know, if**  
 12 **that scenario happened, my land values drop by a**  
 13 **third or a half, my water right almost becomes**  
 14 **worthless, and then, you know, the City has got**  
 15 **less competition for the water in the Equus Beds**  
 16 **because a bunch of irrigators are going to be**  
 17 **shut down.**  
 18 **PRESIDING OFFICER:** Excuse me, I  
 19 have a question, what were you just reading  
 20 from?  
 21 **A. I'm sorry, I couldn't hear?**  
 22 **PRESIDING OFFICER:** You were just  
 23 reading from an excerpt.  
 24 **A. I was reading from a note that I had that quoted**  
 25 **that exhibit.**

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1 **PRESIDING OFFICER:** Which exhibit  
 2 was that?  
 3 **MS. WENDLING:** It is Exhibit 18,  
 4 it's the interrogatory responses. We can  
 5 flip to that. It's District Exhibit 18.  
 6 **PRESIDING OFFICER:** Thank you.  
 7 **BY MS. WENDLING:**  
 8 **Q. So, Mr. Basore, you've talked quite a bit about**  
 9 **your decision to intervene and some of the**  
 10 **reasons for deciding to intervene in this**  
 11 **matter. Are there any further reasons that you**  
 12 **have not yet disclosed that you would like to**  
 13 **share with us?**  
 14 **A. One of the things that I keep hearing is that**  
 15 **some of the city people, and -- and perhaps even**  
 16 **some of the folks in -- in, you know, some of**  
 17 **the agencies were discounting our concern as**  
 18 **residents of the Equus Beds is being that we**  
 19 **just don't like Wichita. And I want to use**  
 20 **myself as an example to say, no, that's really**  
 21 **not -- not a true case. I made my living in**  
 22 **downtown Wichita in two different careers for**  
 23 **25 years, my wife worked in downtown Wichita for**  
 24 **20 some years. We spent a lot of money in**  
 25 **downtown Wichita.**

1 What has developed, I think, out here over  
2 decades has been a fair amount of distrust of  
3 the City when they come out with a proposal or  
4 some action. I tend to -- I tend to  
5 characterize it a little bit as the arrogance of  
6 entitlement sort of attitude. I go back to 1957  
7 when they were constructing the 66-inch pipeline  
8 and they were building the 3 million gallon  
9 surge storage tank a mile west of Bentley. And  
10 my father was chairman of the drainage district  
11 at the time, and a neighbor showed up and said,  
12 you need to get up there, the City has just  
13 shoved a big hole threw the east bank of one of  
14 the major diversion laterals coming off the main  
15 ditch headed for the river.

16 And we went up there, and I went with him,  
17 and they had had a D4 Cat and they had shoved a  
18 6-foot-wide notch through the east berm of the  
19 diversion and were installing an 18- or 20-inch  
20 overflow pipe from the tank and also a bottom  
21 drain with a valve on it. And they had never  
22 had any contact with the drainage district,  
23 there was no MOU, there was no understanding,  
24 there was no notice of any kind, they just did  
25 it, put it in, installed it, and buried it. And

1 if you're really interested, my dad actually  
2 took pictures and I found them awhile back and  
3 they're dated 1957.

4 About, well, 1977 or so, the Bureau of  
5 Reclamation held a hearing here in Halstead, a  
6 public hearing because Wichita was applying for  
7 additional water rights out of both, I think,  
8 Cheney and the Equus Beds. I attended that  
9 hearing, it motivated me, I ended up deciding  
10 the old adage if you want to fight city hall,  
11 you better join them, so I went to Wichita and  
12 started attending the Wichita Chamber of  
13 Commerce water resource committee hearings -- or  
14 not committee hearings but committee meetings.

15 And had lots of presentations from the  
16 City, understood that they were looking for  
17 future water supply. They looked at building a  
18 reservoir at Corbin down on the Chikaskia, they  
19 looked at building one in Douglass down on the  
20 Walnut, they looked at building one down in --  
21 in Cowley County. And then I also understood  
22 how the City utilized their water.

23 And in that process, I got curious and got  
24 ahold of a -- fast-forward, I don't even  
25 remember where I got it, but a copy of the

1 City's water appropriation permit for the Equus  
2 Beds. And when I read through, it gave the  
3 place of use as the City of Wichita, period.  
4 Not being a lawyer but that sort of told me that  
5 that meant the corporate city limits of Wichita.

6 Well, I knew at the time they were selling  
7 water to one or two surrounding towns and a  
8 rural water district. Clearly not reflected in  
9 their place of use. I called DWR to question  
10 and say, hey, wait a minute, this doesn't appear  
11 to be right, and I don't remember -- I mean,  
12 this is 40 years ago, I don't remember who I  
13 talked to in DWR, somebody in water  
14 appropriations, and they pulled it up and looked  
15 at it and said, well, it looks like you're  
16 right, we'll ask Wichita to -- it's just an  
17 oversight, we'll ask them to correct it, which  
18 struck me as, wait a minute, if Wichita or  
19 somebody else had called DWR to complain that I  
20 was selling part of my irrigated water rights to  
21 a neighbor, DWR would probably have come down on  
22 me with civil penalties and I probably would  
23 have lost whatever amount of my water right I  
24 was selling. But in this case, it was a  
25 spanking of the hands.

1 The City in looking for additional water  
2 sources decided that first to try and put  
3 together a pipeline consortium to get water out  
4 of Kanopolis. Because of some, I don't know,  
5 water wasn't available, the navigation use,  
6 whatever it was, that didn't look like it would  
7 work, so they switched it over to Milford. In  
8 about 1983, they found out that there was no  
9 vehicle under state regulation or statute to  
10 allow for an inter-basin transfer of water in  
11 Kansas.

12 And to understand inter-basin transfer, if  
13 you take the State of Kansas and draw a belt  
14 line horizontally across the middle of it, all  
15 the precipitation in the north half of the state  
16 goes to the Missouri River system, all the  
17 precipitation in the south half of the state  
18 goes to the Arkansas River system. Those are  
19 two separate major basins, and what they were  
20 asking for was water from Milford in the Kansas  
21 and the Missouri River basin to be transferred  
22 into the Arkansas River basin.

23 And so they asked their legislators from  
24 the Wichita area to sponsor a bill, they did, it  
25 came up for senate natural resource committee

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1 hearings, and being on the water committee for  
 2 the chamber and having had pres -- set these  
 3 presentations, I knew their water billing  
 4 structure was such that everybody got a certain  
 5 amount of water for their usability at a certain  
 6 price, but if you used more than that, it was  
 7 discounted. And there were two or three steps  
 8 in there that the more water you used, the  
 9 cheaper it got.

10 And it was one of the selling points of the  
 11 chamber of commerce and the city business  
 12 development people that, you know, expand your  
 13 business in Wichita, bring your business to  
 14 Wichita, we have plenty of water, we're planning  
 15 for the future, and the more you use, the  
 16 cheaper it gets. They didn't have anything in  
 17 the way of a conservation plan.

18 I had been serving for a number of years on  
 19 the county conservation board and knew that we  
 20 were helping farmers with some cost share to do  
 21 conservation practices for soil and water, and  
 22 anytime you drove through Wichita and it was  
 23 raining, you were probably going to be treated  
 24 to sprinklers running on the golf courses and  
 25 front yards and the corporate green spaces.

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1 So I went -- I took it on myself, I went to  
 2 Topeka, I testified as an individual saying that  
 3 they were not good stewards of water and that  
 4 they shouldn't be rewarded with more water to  
 5 waste when they weren't taking care, good care  
 6 of the water they already had. The committee  
 7 heard from other witnesses, I think I was the  
 8 only farmer, decided in effect to send it back  
 9 to a picked subcommittee to study it further and  
 10 basically tabled it, which ended up basically  
 11 killing the bill for that session.

12 As I walked out of that hearing, I didn't  
 13 even get -- and it was in the old supreme court  
 14 chambers, I didn't even get to the rotunda when  
 15 I could hear rapid footsteps behind me and  
 16 somebody hollering my name, and I turned around  
 17 and here was Senator Paul Feleciano from  
 18 Wichita, who was on the committee. And he was  
 19 livid, he was not happy, came right up in my  
 20 face and shook his finger at me and, quote,  
 21 said, you kicked the hell out of us in there  
 22 today, end quote.

23 And so we had a little discussion and I  
 24 kept my cool and I reiterated that my concerns  
 25 were that they were poor stewards of the water

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1 and that they needed not to be rewarded with  
 2 more water and this was a, you know,  
 3 inappropriate way to go about it. Well, we  
 4 parted, I drove home, went back to farming.  
 5 About two weeks later, maybe three, I got a call  
 6 from Joe Botinelli (sp), who was the City of  
 7 Wichita water department employee, probably  
 8 similar to Joe Pajor's position more recently,  
 9 and I knew him, he served -- he was also on the  
 10 chamber water resource committee that I was on,  
 11 I knew him, we got along fine. We had a brief,  
 12 pleasant conversation. At the end of it, he  
 13 said, well, the reason I called is I've been  
 14 tasked to put together a citizen advisory  
 15 committee to help the City write a water  
 16 conservation plan, would you serve on it. And  
 17 it took me about five seconds to say, sure, I'd  
 18 be happy to.

19 And so we took a look at it, and we had  
 20 presentations from Joe or other city employees  
 21 and people in the water department as to how  
 22 things worked. Our recommendations were to turn  
 23 the water rate structure on its head, that  
 24 everybody got a certain amount of water at a  
 25 modest rate, and then there were two or three

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1 tiers above that for the more water you used,  
 2 the more expensive it got. So that it became an  
 3 incentive to conserve.

4 We told them they needed to look at their  
 5 plumbing codes, municipal codes to first allow  
 6 the use of low-water flow fixtures and  
 7 appliances and, second, to encourage it and,  
 8 third, maybe at some point mandate it. We said  
 9 they should take advantage of their monthly  
 10 bills going out to every water customer in town  
 11 to insert water conservation information, what  
 12 people could do in their own house about leaky  
 13 toilets, dripping faucets, and all that sort of  
 14 thing, what to do with the irrigation of lawns  
 15 and green spaces and how to schedule and do  
 16 things there that would conserve water.

17 So we promoted a lot of that, and to their  
 18 credit, the City began in -- doing that,  
 19 creating a water conservation plan. They went  
 20 so far as to, and I think they still do, they  
 21 offer an incentive to people who are replacing  
 22 old fixtures with new low water flow, low water  
 23 use appliances and fixtures, there's a subsidy  
 24 available from the City. At one point, they had  
 25 a house located south of Douglas on the west



1 side of the riverbank that was a demonstration  
2 house full of everything you could do to  
3 conserve water, including put a rain barrel out  
4 back on the -- on the roof gutter in order to  
5 get water to water your plants so you don't have  
6 to use municipal water for doing that.

7 So Wichita has a history of not always  
8 being up front or accurate with what they're  
9 proposing, and so people out here are skeptical  
10 when the City comes out with a proposal such as  
11 this one. You know, has the homework been done  
12 right, has -- has DWR actually sat down and  
13 duplicated on their own the data that's been  
14 suggested by the City, have they double-checked  
15 it for accuracy, or have they just assumed it to  
16 be accurate?

17 This -- this proposition, this changes to  
18 the ASR has very large and very long-term  
19 implications if not done right. It's a little  
20 hard to, from a logic point of view, understand  
21 how you can get credit for putting water in an  
22 aquifer that you didn't put in there to be able  
23 to take it out later. Everybody benefits from a  
24 full aquifer, that is not a question, it's good  
25 for everybody, the city, irrigators, other

1 municipalities, everybody.

2 I had a couple of conversations with Joe  
3 Pajor as this whole proposition came up, and  
4 he -- his basic attitude was, well, if we don't  
5 get this amended ASR thing, we will pump our  
6 40,000 acre-feet down every year regardless.  
7 And it was sort of an implied threat that sort  
8 of told me that, well, gee, does that mean  
9 Cheney is running over the dam and spillway  
10 because it's so full, you're still going to pump  
11 your 40,000 acre-feet when water's being wasted  
12 down the Ninnescah, you know, as if they were  
13 going to pump a 40,000 acre-foot hole just to  
14 spite us.

15 So there -- there are reasons we are  
16 questioning this. We're not obstructionists.  
17 Everybody in town deserves a good clean drink of  
18 water, I understand that, I don't have a problem  
19 with that. The drought plan allows them to  
20 still fill their fountains and swimming pools  
21 when, in effect, we may have to curtail some of  
22 our irrigation or be doing irrigation with lower  
23 quality water.

24 Part of -- I'm one -- I'm probably the only  
25 person involved in this whole hearing process

1 who actually carried petitions around to their  
2 neighbors to get them to sign it to promote the  
3 creation of GMD2 back in the day. And people  
4 were beginning to irrigate with, you know, the  
5 invention of center pivots, and the Groundwater  
6 District Act was then created, and people were,  
7 I don't know struggling but they were frustrated  
8 in dealing -- trying to get water rights through  
9 DWR. I mean, DWR was buried with people trying  
10 to all get irrigation rights at the same time.

11 And they didn't really want to hear that  
12 what we need is another level of government for  
13 you to have to go through to be able to  
14 irrigate. But once you kind of explain to them  
15 that, no, the setup for the GMD2, and all GMDs,  
16 is that it's a local governing body that will  
17 have the ability to have rules and regulations  
18 and be able to deal with local government, which  
19 is always the more local government you can deal  
20 with is more effective than on upstream, and  
21 that everybody who's a water right holder will  
22 be held to the same sort of standard. Whether  
23 you're an irrigator or whether you're the City  
24 of Wichita or whether you're an industry,  
25 they're all going to have to deal with GMD2 on

1 the same basis, and it will level the playing  
2 field somewhat.

3 And at that point, people would say, all  
4 right, I'll sign because they felt they could  
5 see an advantage in having the GMD in place.  
6 And I still feel that way. I think it's  
7 protective for everybody, including the City of  
8 Wichita. City of Wichita doesn't want  
9 irrigators abusing the water rights out here and  
10 vice versa is also true.

11 **MS. WENDLING:** All right. I don't  
12 have any further questions.

13 **PRESIDING OFFICER:** Okay. Thank  
14 you, sir, we'll now see if others have  
15 questions for you. Mr. McLeod, do you have  
16 questions?

17  
18 **CROSS-EXAMINATION**  
19 **BY MR. MCLEOD:**

20 Q. Yes, if we could look at that interrogatory  
21 again that Mr. Basore was reading the City's  
22 answer to about not modeling a particular set of  
23 events. I think that was maybe Exhibit 18.  
24 Mr. Basore, do you remember what interrogatory  
25 that was?

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1 **A. Not directly, no, it's been -- been more than a**  
 2 **year, I'm sorry.**  
 3 Q. You must be muted, I'm getting no audio.  
 4 **A. I think I've -- I think I have found it.**  
 5 Q. Okay. And what interrogatory number was that in  
 6 the set?  
 7 **A. Oh, it was 18.**  
 8 **MS. WENDLING:** I believe we're on  
 9 24.  
 10 **A. Yeah, it was, like, 18 on -- first set of --**  
 11 **first set of interrogatories, number 24,**  
 12 **Exhibit 18.**  
 13 **BY MR. MCLEOD:**  
 14 Q. Okay. And so the question that the City was  
 15 asked was what steps did the City take to  
 16 assess, evaluate, and/or measure the potential  
 17 impact of pumping or otherwise withdrawing the  
 18 120,000 acre-feet in AMCs would have on the  
 19 migration of the Burrton chloride plume and/or  
 20 chloride intrusion from the Arkansas River.  
 21 And -- and you had referred to the answer and  
 22 objection, but I want to ask you, sir, do you  
 23 understand that under the proposal, this  
 24 withdrawal of 120,000 acre-feet in AMCs is not  
 25 something that would happen all at once because

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1 there's an 18,000 acre-foot annual limitation on  
 2 the credits the City could draw that?  
 3 **A. Yes.**  
 4 Q. Did you understand that that limit was in place?  
 5 **A. Yes, I understand they've got a limitation**  
 6 **plugged in there of, what, 19,000 acre-feet a**  
 7 **year, but my -- my point is in reality we have**  
 8 **never been in a situation in an eight- or a**  
 9 **ten-year drought where one of the water users is**  
 10 **pulling an additional 19,000 acre-feet a year**  
 11 **out of it for a total of up to 120,000**  
 12 **acre-feet. We have no historical data to base**  
 13 **an outcome on with any certainty.**  
 14 **It's all -- it's a computer model and**  
 15 **it's a -- it may be well designed, it may not be**  
 16 **well designed, I'm not a computer modeler, I**  
 17 **can't answer that, but it gives me pause to say,**  
 18 **wait a minute. And if in point of fact even an**  
 19 **additional -- if we're in an eight-year drought,**  
 20 **everybody, including the City, I'm presuming, is**  
 21 **going to be pulling their full water right out,**  
 22 **including 40,000 acre-feet for the City and now**  
 23 **an additional 19,000, along with the irrigators'**  
 24 **water rights, the other municipalities, and the**  
 25 **other industrial users.**

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1 **So the aquifer is going to have a full load**  
 2 **coming out of it every year for eight years or**  
 3 **ten years, whatever the drought scenario is, and**  
 4 **I'm saying the cumulative effect of that, we**  
 5 **don't have absolute proof as to what it is. And**  
 6 **I feel like I'm setting out there almost**  
 7 **staring -- staring down the barrel of a gun not**  
 8 **knowing what it means for me and my property and**  
 9 **my water rights and my ability to use water.**  
 10 Q. So I need to ask you this question as well: Do  
 11 you understand that the 120,000 acre-foot limit  
 12 itself is a cap? It's not a gift to the City of  
 13 120,000 acre-feet of credits, it's a limit on  
 14 the number of credits the City could accumulate,  
 15 which limit does not exist under the current  
 16 permit?  
 17 **A. No, I understand it's not a gift, it's**  
 18 **supposedly an earned amount, but it's -- and**  
 19 **it's one thing if the City had actually injected**  
 20 **that much water into the system and wanted to**  
 21 **pull it back out, that's a legitimate taking**  
 22 **because they have added the water to the system**  
 23 **and, therefore, would have first call to remove**  
 24 **it. But in this case, the implication is that**  
 25 **if the aquifer is full and they don't have the**

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1 **ability to inject that much water that down the**  
 2 **road they would still have the ability to**  
 3 **withdraw that much water.**  
 4 Q. So in terms of the existing rules, you're fine  
 5 with the way things are under the current  
 6 permit, you wouldn't be concerned of the City  
 7 withdrawing 120,000 acre-feet, 19,000 acre-feet  
 8 a year at a time if the City had actually  
 9 injected all that water in the aquifer?  
 10 **A. Yeah, I think that's -- I think that is**  
 11 **reasonable. I mean, if the City can inject**  
 12 **19,000 acre-feet of water a year, then I can**  
 13 **understand where they should have first call on**  
 14 **pulling it back out, barring some natural**  
 15 **disaster that overtakes all of the rules and**  
 16 **regulations that we've all established and lived**  
 17 **by.**  
 18 Q. Mr. Basore, you testified that you don't really  
 19 have an understanding of why water quality is  
 20 better in the -- in the lower quality wells on  
 21 your property. Not having the background to  
 22 know that, do you feel you're qualified to  
 23 determine what, if any, impact the ASR proposal  
 24 will have on your well in terms of chloride  
 25 infiltration?

1 **A. I'm on? Okay. I am presuming that the impact**  
2 **of river water moving into the aquifer is at all**  
3 **levels. The hydrogeologists tell us that the**  
4 **saltier water tends to settle to the bottom, but**  
5 **I also know that there are a lot of clay lenses**  
6 **that stratify the aquifer in various places. So**  
7 **it's hard to predict exactly where it will move**  
8 **or where it won't move, but the general thrust**  
9 **of the water moving from the river into the**  
10 **Equus Beds is to the north and east towards the**  
11 **well field cone of influence. And what level**  
12 **that may be, mine may be, because I am close**  
13 **enough to the river that the initial inflow from**  
14 **the river into the Equus Beds, the saltier water**  
15 **is on top because the river is shallow, and the**  
16 **further north it gets pulled into the well**  
17 **field, this heavier saline water then has a**  
18 **chance to matriculate to the bottom of the**  
19 **aquifer. I don't know. That's an answer that**  
20 **geohydrologists might be able to answer, but**  
21 **regardless, at some point my surface water or**  
22 **deep water both might become untenable for use,**  
23 **and that is my concern.**

24 Q. Do you know what impact the drawdown of your own  
25 wells could have on chloride migration?

1 **A. I'm sorry, I didn't quite understand? Didn't**  
2 **quite understand.**  
3 Q. Do you know what impact the drawdown of your own  
4 wells could have on chloride migration if the  
5 premise is that the drawdown of a well moves  
6 chlorides towards the pumping source, could your  
7 wells not be contributing to that effect as  
8 well?  
9 **A. They will contribute some small amount toward**  
10 **that, but I am mindful of the fact that for each**  
11 **city water well, as I recall, they get, like, a**  
12 **750 acre-foot allocation, where my irrigation**  
13 **wells are going to be generally 130, yeah, of**  
14 **feet, acre-feet or less. I've got one that's**  
15 **240, but it's -- it's irrigating a much larger**  
16 **parcel of ground. So it takes a concentration**  
17 **of irrigation wells to have the same effect on**  
18 **the aquifer that one City of Wichita well has.**

19 Q. You mentioned having gone through the -- the  
20 permitting process for several of your rights.  
21 When you filed for your water rights, did you  
22 have to do any groundwater modeling for the  
23 chief engineer to approve your permits?

24 **A. No.**

25 Q. When you filed your water rights paperwork, did

1 you have to do any groundwater modeling to prove  
2 that your water rights will not impact minimum  
3 desirable streamflow?

4 **A. No. My water rights lying close to the Big**  
5 **Arkansas River and since it's a losing reach of**  
6 **the stream would probably by definition not have**  
7 **any impact on the base flow because the river**  
8 **generally is feeding water into the aquifer, not**  
9 **the other way around.**

10 Q. So wouldn't -- wouldn't that be the very  
11 situation in which you would expect your wells  
12 to cause more water to leave that losing reach  
13 of the stream and infiltrate the aquifer?

14 **A. Every well outside the river will have an impact**  
15 **in pulling water out and influencing the river**  
16 **to move further north, but if you -- if you**  
17 **look, for example, at Stremel's report on the**  
18 **geohydrology, if you will, in the Equus Beds in**  
19 **1955, his map shows that at that point in time**  
20 **there were 35 City of Wichita wells in what has**  
21 **become the Equus Beds groundwater district and**  
22 **there were only nine irrigation wells existing**  
23 **in 1955, and the City had already been pumping**  
24 **for 15 years.**

25 Q. When you filed for your water rights, did you

1 have to do any groundwater modeling to prove  
2 that your rights wouldn't have any impact on the  
3 Arkansas River or Burrton chloride plume?  
4 **A. No, I am ten miles or more from the Burrton**  
5 **chloride plume. And water tends to move south**  
6 **and east in the Equus Beds underground, about**  
7 **the same sort of direction that the Big Arkansas**  
8 **River moves, which means the -- the plume would**  
9 **probably end up north of me if it continued on**  
10 **its current course anyway.**

11 Q. When you redrilled your irrigation wells deeper,  
12 did you have to perform any modeling to make  
13 sure that you wouldn't impair other water rights  
14 by making that change?  
15 **A. All of my wells were drilled after GMD2 came**  
16 **into existence and they had the policy of trying**  
17 **to balance withdrawals from the 20 percent**  
18 **annual recharge figure and so they were using**  
19 **safe yield calculations; and my water rights**  
20 **were early enough -- or my applications were**  
21 **early enough that there was still water**  
22 **available where I was wanting to drill my wells.**

23 Q. Mr. Basore, on the -- on the farmland that you  
24 have listed out, you indicated that -- that you  
25 pay for the well construction and your tenant

23 Q. Mr. Basore, on the -- on the farmland that you  
24 have listed out, you indicated that -- that you  
25 pay for the well construction and your tenant

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1 pays for the pump. In terms of the operating  
 2 decision of how much water to use, do you or the  
 3 tenant make that decision, or did the two of you  
 4 consult on how much of the actual water right to  
 5 use in a given year?  
 6 **A. We consult a lot on the operation of the farm,**  
 7 **including, you know, what crops he's raising in**  
 8 **anticipation and understanding what impact that**  
 9 **might have on -- on water use.**  
 10 Q. Who is the person who's the tenant on that site?  
 11 **MS. WENDLING:** I'll object on  
 12 relevance.  
 13 **PRESIDING OFFICER:** I'm sorry, I  
 14 didn't -- I didn't even understand the  
 15 question, sorry.  
 16 **MR. MCLEOD:** The question is who is  
 17 the person who's tenant on that lease farm  
 18 site who's consulting on the water rights  
 19 use decisions?  
 20 **PRESIDING OFFICER:** Forgive me but  
 21 I'm still not -- I can't hear you well  
 22 enough to understand, forgive me, try --  
 23 try again.  
 24 **MR. MCLEOD:** It sounds like we're  
 25 having some feedback issues again. The

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1 question is the tenant who leases  
 2 Mr. Basore's farm property and who consults  
 3 with him on the use of the water right on  
 4 that property, I have asked who that person  
 5 is?  
 6 **PRESIDING OFFICER:** Are you asking  
 7 for this person's name?  
 8 **MR. MCLEOD:** Yes.  
 9 **PRESIDING OFFICER:** Okay. I have --  
 10 I have an objection to the question and  
 11 I'm -- I'm inclined to sustain it, I  
 12 don't -- are you asking for the ten -- the  
 13 name of the tenant?  
 14 **MR. MCLEOD:** Yes. And the reason  
 15 for asking is, I mean, obviously  
 16 Mr. Basore, the owner of the property and  
 17 technical owner of the right, is involved  
 18 in this case with -- with concerns; I'd  
 19 like to know if the tenant is as well since  
 20 that's the person who's -- who's actually  
 21 operating the property, making the  
 22 effective use of the right as tenant.  
 23 **PRESIDING OFFICER:** Can you explain  
 24 the -- the relevance of your question, I  
 25 don't -- I don't understand? You seem to

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1 be implying that that goes to the relevance  
 2 of Mr. Basore's testimony?  
 3 **MR. MCLEOD:** Well, I -- I mean there  
 4 are two people sharing a right. One of  
 5 them, Mr. Basore, has these concerns, and  
 6 I'd like to know if the tenant also is  
 7 involved in the case for some party or has  
 8 similar concerns or if the tenant is not  
 9 concerned by the City's proposal?  
 10 **PRESIDING OFFICER:** Ms. Wendling?  
 11 **MS. WENDLING:** Water rights are  
 12 property rights, and Mr. Basore owns that  
 13 right. He has the right to lease that  
 14 property right out to someone else, but  
 15 that does not bring that tenant into this,  
 16 no more than this case -- this hearing  
 17 brings in all of the City of Wichita's  
 18 customers. This is -- it's Mr. Basore's  
 19 water right, he's testifying, Mr. Basore is  
 20 the intervenor, the tenant is not the  
 21 intervenor.  
 22 **PRESIDING OFFICER:** Well, that was  
 23 where my thinking was going, that  
 24 Mr. Basore is the owner of the water right,  
 25 and I'm not sure that whoever he leases to

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1 that their identity is relevant to this.  
 2 He's already stated that he has not  
 3 delegated the authority to operate that  
 4 solely to the tenant, so I'm going to  
 5 sustain the objection. Next question.  
 6 **MR. MCLEOD:** Well, I don't have  
 7 further questions for the witness.  
 8 **PRESIDING OFFICER:** Are there any  
 9 questions from the Groundwater Man -- or,  
 10 I'm sorry, from DWR?  
 11 **MS. MURRAY:** I don't have any  
 12 questions.  
 13 **PRESIDING OFFICER:** Are there any  
 14 questions from the GMD?  
 15 **MR. STUCKY:** Yes, just a few  
 16 questions from the GMD.  
 17  
 18 **CROSS-EXAMINATION**  
 19 **BY MR. STUCKY:**  
 20 Q. All right. Mr. Basore, just a moment ago, you  
 21 were asked a question about whether or not when  
 22 you applied for your permits you did any sort of  
 23 modeling or anything of that nature. Do you  
 24 recall that line of questioning?  
 25 **A. Yes.**

1 Q. Do you understand that in the case of the City  
2 of Wichita's proposal, the Groundwater  
3 Management District No. 2 is against or -- or is  
4 recommending the City's proposal for denial, do  
5 you understand that that's our -- the District's  
6 position?

7 **A. Yes.**

8 Q. And, in fact, if you had applied for a water  
9 permit and -- in the District, would your  
10 application not go before the GMD2 first, if you  
11 were applying for a new water permit?

12 **A. That's the first stop for shopping if you're  
13 looking for a water right is to go to GMD2 and  
14 look for a determination as to is there actual  
15 available water rights for a place that you're  
16 looking at to consider irrigation.**

17 Q. And at the point that you applied for a permit  
18 with GMD2 and if the GMD2 denied the application  
19 for a permit and at that point if you felt that  
20 the denial was in error, at that point, isn't  
21 that when you would do your own modeling or your  
22 own research to see if it was worth appealing  
23 the District's decision?

24 **A. Sure, we would try to develop whatever  
25 information we could, see if there are**

1 **precedents out there that would lend for the  
2 approval of the, you know, a similar type of  
3 situation and that sort of stuff to gather what  
4 evidence we could to move forward and -- and  
5 achieve a permit.**

6 Q. So in that sense, it would be analogous to the  
7 situation here, the GMD2 oppose -- opposes the  
8 City of Wichita's proposal, and as a result, the  
9 City of Wichita did additional modeling and  
10 work, that's essentially what you would do in  
11 this permitting process as well; is that  
12 correct?

13 **A. Sure, wherever the logic trail led to that what  
14 would we need to do to, you know, prove the  
15 worthiness of our case, yeah.**

16 Q. When you were talking about your CV and your  
17 resume, you talked about some extensive  
18 experience that you had with KDHE and I, in  
19 fact, heard you say that if there was a  
20 unique -- a unique question about water quality  
21 or things of that nature, a lot of times they  
22 would ask you to comment on or provide the  
23 answer to the question; is that right?

24 **A. Yes.**

25 Q. And as I understood you to say, you testified as

1 to a number of different elements of water  
2 quality that you addressed during your time in  
3 KDHE?

4 **A. Yes. Was involved in multiple situations and  
5 they crossed the line into various aspects of  
6 other divisions of KDHE because just that they  
7 were more complicated than the straightforward.**

8 Q. Okay. And as I look at your resume, it  
9 indicates to me that you were in that role  
10 analyzing pollution for something like 15 years;  
11 is that correct?

12 **A. Yes, I retired, well, three years ago, what,  
13 2017, in July when I retired. Yes, I -- I  
14 performed that basic same function from when I  
15 began, but some of it expanded as I gained more  
16 experience and exposure and acceptance as a  
17 troubleshooter maybe.**

18 Q. And you were in the room when Mr. Austin was  
19 testifying not long ago; is that true?

20 **A. Yes.**

21 Q. And you heard Mr. Austin testify that if there  
22 are water quality issues, depending on the area  
23 affected, he would be handling those in DWR, so  
24 when he was in his role with dams and  
25 obstructions, he would handle it there, and then

1 he also addressed it in other roles, but do you  
2 recall that testimony?

1 he also addressed it in other roles, but do you  
2 recall that testimony?

3 **A. Yes, I do.**

4 Q. And do you also recall his testimony that the  
5 vast majority of the time, though, the Division  
6 of Water Resources wasn't the expert, if you  
7 will, on water quality issues. Do you recall  
8 him saying that, that a lot of times it was  
9 addressed by KDHE?

10 **A. Yes, that's the, kind of the three-legged stool  
11 in Kansas when it comes to water is that KDHE  
12 handles water quality, Division of Water  
13 Resources handles water volume and use, and --  
14 and the Water Authority handles reservoirs  
15 and -- and, you know, dedicated waters from  
16 those.**

17 Q. And so if, to the extent, the KDHE is the expert  
18 in water quality matters in Kansas and you were  
19 one of the head investigators of those water  
20 quality issues, in essence, had you been so  
21 designated, would you have been essentially an  
22 expert on water quality then?

23 **A. No, I never would consider myself to be an  
24 expert. I knew enough to find people who were  
25 experts or work with people who were that, but I**

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1 **have been told over, you know, a period of years**  
 2 **that I had developed a fairly workmanlike**  
 3 **understanding of a lot of water issues, both**  
 4 **groundwater and surface water and how they**  
 5 **sometimes interplayed with each other, and had**  
 6 **some ability to go find the answers.**  
 7 Q. Okay. Now, I understand that for today's  
 8 purposes in testifying you're being humble  
 9 and -- and you feel that you wouldn't be -- be  
 10 an expert just by virtue of your education or  
 11 whatever it may be, I'm not sure why you're  
 12 being humble, but based on 15 years of  
 13 experience of handle -- handling water quality  
 14 issues, if -- if expertise was based on  
 15 experience, you would have that expertise,  
 16 correct?  
 17 **MR. MCLEOD:** I'm going to --  
 18 (Reporter requests clarification  
 19 of Mr. McLeod and the witness.)  
 20 **MR. MCLEOD:** Madam Hearing Officer,  
 21 I -- I think the line of questioning has  
 22 gone too far already given that it was  
 23 stipulated by Intervenor's counsel before  
 24 the hearing began that the CV was not being  
 25 proffered to offer Mr. Basore as an expert,

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1 and it's just clear to me that the  
 2 District's counsel is now attempting to do  
 3 that, bootstrapping in an undisclosed  
 4 expert.  
 5 **MR. STUCKY:** Madam Hearing Officer,  
 6 if I may --  
 7 **PRESIDING OFFICER:** Mr. Stucky.  
 8 **MR. STUCKY:** Yeah, if I may, I think  
 9 I'm actually entitled to some latitude here  
 10 and for the reason that Mr. McLeod opened  
 11 the door to this testimony. If you may  
 12 recall, Mr. McLeod in his cross-examination  
 13 asked questions about how water quality  
 14 would be impacted by Mr. Basore pumping  
 15 down his well or by the City pumping down  
 16 the City's rights, and so that door was  
 17 opened. There were specific questions  
 18 asked about Mr. Basore's knowledge of water  
 19 quality impacts based on the number of  
 20 different scenarios that Mr. McLeod asked  
 21 about. And certainly since he asked those  
 22 questions, the door is opened at this  
 23 point, and I think I'm free to voir dire  
 24 and get a better sense or understanding of  
 25 Mr. Basore's expertise in that arena.

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1 **MR. MCLEOD:** Well, I think that that  
 2 is a spurious argument and that what we're  
 3 seeing here is probably a  
 4 coordinated-from-the-beginning effort to  
 5 bring somebody who was never listed as an  
 6 expert, never provided any expert  
 7 disclosure or detail on the intended expert  
 8 testimony and converting that person into  
 9 an expert witness after counsel sponsoring  
 10 the witness stipulated that they're not  
 11 being so offered.  
 12 **MR. STUCKY:** There -- there is no  
 13 concerted effort, we got the CV at the same  
 14 time as -- as everybody else, and I was  
 15 just following up on some questions asked  
 16 by the City. And so certainly not a  
 17 nefarious or spurious effort here, I'm just  
 18 asking a few questions about his resume and  
 19 to try and understand voir dire based on  
 20 the questions already asked by the City.  
 21 **PRESIDING OFFICER:** Okay. I think I  
 22 can resolve this. Mr. McLeod did ask the  
 23 witness do you feel you're qualified to  
 24 answer, and then he postulated a number of  
 25 things. I think Mr. Stucky is responding

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1 to that of are you qualified to answer  
 2 these questions. Neither one of those  
 3 rises to the level of qualifying Mr. Basore  
 4 as an expert, and because I allowed the --  
 5 the resume and the discussion of the resume  
 6 based on Ms. Wendling's assurances that  
 7 there would not be an attempt to qualify  
 8 Mr. Basore as an expert, then I'm not going  
 9 to allow this to head in that direction at  
 10 this point.  
 11 I'm not -- I don't want to entertain a  
 12 request that he be qualified as an expert,  
 13 but I think it is a fair response to point  
 14 out some of his experience to -- in  
 15 response to the question that Mr. McLeod  
 16 asked about do you feel you're qualified to  
 17 talk about the impact. So without using  
 18 the term expert, I think we've probably  
 19 covered or, Mr. Stucky, if you want to  
 20 bring up additional points about his  
 21 background, I don't think we need to keep  
 22 drilling in to whether he feels he's an  
 23 expert; I think we do have before us  
 24 material relevant to does he feel qualified  
 25 to answer the questions.

1 So to that extent, I'm going to sustain  
2 the objection, but I don't think since  
3 we're not going to go in the direction of  
4 discussing whether or not he can be  
5 qualified as an expert, we don't need to  
6 worry about striking that testimony because  
7 that's not where we're going to go. So you  
8 may proceed.  
9 **MR. STUCKY:** Thank you.  
10 **BY MR. STUCKY:**  
11 Q. So just a moment ago, you had mentioned that you  
12 have 15 years of experience in assessing water  
13 quality issues, and we had a series of questions  
14 regarding that, correct, Mr. Basore?  
15 **A. Yes.**  
16 Q. And can you also explain just -- just so it's  
17 clear to me, you indicate that during that  
18 15 years you taught classes on -- on some of  
19 those topics and from your experiences in KDHE,  
20 but you also indicate that you worked with the  
21 Environmental Protection Agency, the Division of  
22 Water Resource -- Resources, conservation  
23 districts, a variety of different -- the Water  
24 Office, a variety of other agencies in your work  
25 with water quality. Can you just explain for me

1 the interplay between those agencies and how you  
2 worked with them?  
3 **A. Sure. Am I on? Okay. In working with DWR, and**  
4 **you referenced a little bit ago Mr. Austin's**  
5 **experience with structures regarding dams and**  
6 **other structures, did some work with DWR**  
7 **regarding those. Concerns might -- when people**  
8 **had questions, concerns, or complaints, they**  
9 **would look in the phone book and see who they**  
10 **could come up with first, which -- which means**  
11 **that we often at KDHE were the first ones to get**  
12 **a phone call.**  
13 **Are you not hearing me? Oh, okay.**  
14 **So we, you know, gained enough information**  
15 **to understand what their -- where their question**  
16 **was sort of grounded, and then we would reach**  
17 **out to whoever might also be a player and -- and**  
18 **if it was not us, we would hand it off; and if**  
19 **it was something we could help them with, we**  
20 **would work with them.**  
21 **So worked with DWR, again the Stafford**  
22 **district office on dredge and fill permits, on**  
23 **structures, on drainage, and that sort of thing**  
24 **quite a bit, did shared inspections with them.**  
25 **Did shared inspections -- well, like the Plum**

1 **Thicket Landfill down in Harper County, was on**  
2 **that site with EPA people and U.S. Fish &**  
3 **Wildlife people. Did inspections on concerns**  
4 **that were raised by water quality, possible**  
5 **impacts on wildlife and streams through the**  
6 **water quality and did inspections and worked**  
7 **with Department of Wildlife & Parks at the state**  
8 **level, you know, the association of conservation**  
9 **districts, individual conservation districts**  
10 **because they have the power to access cost-share**  
11 **monies to go to farmers, ranchers, and**  
12 **landowners to help do streambank stabilization,**  
13 **buffer strips. Moved to no-till farming and**  
14 **things that reduce the sediment load going into**  
15 **streams and the adjunctive sediment going into**  
16 **streams that phosphorous tends to normally be**  
17 **tied to soil particles, so if you're getting**  
18 **soil erosion, you're probably generating**  
19 **phosphorous going into stream; and if you can**  
20 **prevent the one, you automatically prevent the**  
21 **other.**  
22 **Worked with the folks at KDHE who were in**  
23 **charge of feedlots, CAFO, confined animal**  
24 **feeding operations, that there are situations**  
25 **out there where farmers and ranchers may have**

1 **winter feeding areas for cattle or livestock**  
2 **that have an impact. They may be located**  
3 **downwind of a windbreak and against the**  
4 **streambank; well, in effect, they are a**  
5 **concentration during the winter months of**  
6 **livestock manure that's going to impact that**  
7 **stream the first big rains you get the next**  
8 **spring, so you want to work with them. They**  
9 **don't need a permit, they don't have enough**  
10 **animals and they don't concentrate feed year**  
11 **around so they don't qualify as a CAFO, but you**  
12 **got to work with them with K-State extension**  
13 **specialists to say, okay, here's what you can**  
14 **do, let's move the watering site up over here,**  
15 **let's put in a fence and keep them out of the**  
16 **stream, let's move your feeding area over here,**  
17 **and do things that are non-requirements,**  
18 **non-regimental, if you will, to improve the**  
19 **water quality by working with everybody.**  
20 **And at the end of the day, our approach**  
21 **was, how can we make this a win-win, how can we**  
22 **end up at the end of the day not putting anybody**  
23 **out of business but protecting the health and**  
24 **safety of the environment and the people that**  
25 **are using it and so that everybody survives and**

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1 goes on another day, and -- and our little  
 2 corner of the world called Kansas is better off  
 3 for it.  
 4 Q. So would you have actually helped the Division  
 5 of Water Resources or been consulted by the  
 6 Division of Water Resources for impairment  
 7 investigations if there -- if -- to the extent  
 8 those impairment investigations would have  
 9 involved water quality issues?  
 10 A. Sometimes I might. It tended to be more in  
 11 dealing with county code people and private  
 12 wells and helping assess those; that they've got  
 13 a well that didn't pass the safety test for  
 14 E. coli or nitrates, and you go out and look at  
 15 it and say, okay, it's an old farmstead, it's  
 16 not a farm anymore but where was the livestock  
 17 pens when it was a farm, are they upgradient to  
 18 where the water well is, where's the septic tank  
 19 in relation to where the water well is, what  
 20 else historically has gone on on this location  
 21 that, oh, by the way, there used to be a dry  
 22 cleaner a mile away that's now upgradient. So  
 23 we would run into those kind of situations  
 24 and -- and, again, call in experts and  
 25 organizations and businesses that were in the

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1 business of remediation, or whatever, to  
 2 determine what was going on and what was the  
 3 best way to cure it.  
 4 You know, you need to get the well out of  
 5 your basement and keep the rats from making a  
 6 nest on it and put in a new well and keep --  
 7 move it away from where you're filling your  
 8 spray tank with farm chemicals. You know, we  
 9 did -- we did a lot of water quality work with  
 10 individuals out there who needed education and  
 11 opportunities, but we also did the same thing  
 12 with city municipalities. Some of them would  
 13 have nitrates and you get to looking and, well,  
 14 there are irrigators nearby that are pouring on  
 15 a lot of fertilizer or in some cases there was  
 16 natural phosphorous in the soil that was being  
 17 eroded down into the lakes. Lake Afton comes to  
 18 mind as one of those.  
 19 Q. So both Ms. Wendling and Mr. McLeod asked you  
 20 questions about the extent to which you were  
 21 concerned about water quality issues if there  
 22 were drawdowns in the aquifer, and I think they  
 23 asked it specific to chlorides, and I believe  
 24 your answer was that if there's significant  
 25 drawdowns by the withdrawal of these aquifer

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1 maintenance credits or lowering the minimum  
 2 index level, from your experience you had  
 3 concerns about water quality as it relates to  
 4 the chlorides; is that correct?  
 5 A. Yes, absolutely.  
 6 Q. And I guess just because I asked Mr. Austin, I'm  
 7 going to ask you as well, when you were with  
 8 KDHE, you also would have analyzed other  
 9 indicators of water quality beyond chlorides,  
 10 correct, such as arsenic or things of that  
 11 nature?  
 12 A. I am not a lab technician, I would not have  
 13 analyzed them, but we might have indicated that  
 14 somebody should get a sample analyzed in a  
 15 certified laboratory. That was one of the  
 16 things we would do is we had a list of  
 17 acceptable and recommendable certified labs in  
 18 the State of Kansas where you can send water  
 19 samples.  
 20 Many of the county health departments will  
 21 help you analyze your private drinking water  
 22 well mainly for nitrates and bacteria because  
 23 they are simple tests. The nitrate, of course,  
 24 is an issue over ten parts per million, you end  
 25 up with the blue baby syndrome, which can be

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1 very harmful to infants or the elderly or people  
 2 with compromised immune systems. And the  
 3 E. coli is a simple test and an indicator, and  
 4 the general consensus is if you're finding  
 5 E. coli in the water supply, you probably are  
 6 also having other much more lethal pathogens in  
 7 that water supply, or you may; but they're more  
 8 difficult and expensive and time consuming to  
 9 test for so they rely on E. coli as an indicator  
 10 that says, whoops, you've got an issue here that  
 11 you need to look at and probably solve whatever  
 12 source it's coming from. And maybe that means  
 13 you need a new well or you need to take, you  
 14 know, other protective measures.  
 15 Q. Okay. And so I understand that you might have  
 16 not been the one that actually, you know, was --  
 17 was essentially using the microscope to analyze  
 18 the samples, but you would have seen the  
 19 results. And -- and if I'm talking about  
 20 analyzing from that sense, in other words, you  
 21 would have seen the results as water quality was  
 22 impacted, you -- you would have at least been  
 23 privy to those results or looked at the results  
 24 to understand how a variety of different  
 25 contaminants would have been impacted in your



1 analysis, correct?  
2 **A. Yes. And in -- and in dealing with the various**  
3 **WRAPS projects, depending on what the**  
4 **contaminant issue was they were looking for,**  
5 **again whether it was E. coli, nitrates,**  
6 **phosphorous, or in the case of the Little Ark**  
7 **WRAPS the atrazine, those were sampled through**  
8 **K-State lab results, they were published, and**  
9 **you could track, and I'm sure that part of**  
10 **Little Ark WRAPS process is they report at least**  
11 **annually to the City of Wichita as to the water**  
12 **quality that's occurring and that also the**  
13 **amount of acres, if you will, of installed**  
14 **conservation practices that have been put in**  
15 **place to ameliorate such pollution threats to**  
16 **the Little River that then impacts the water**  
17 **quality for the ASR to show Wichita that the**  
18 **substantive money they are providing for the**  
19 **WRAPS for farmers to do these kinds of**  
20 **enhancements are worth their investment in doing**  
21 **so.**  
22 Q. So to build off of what both Ms. Wendling and  
23 Mr. McLeod asked previously, aside from chloride  
24 contamination based on your 15 years of  
25 experience working for KDHE, is your concern

1 **into Kansas from John Redmond was very poor**  
2 **quality.**  
3 Q. I'm going to move on to a different line of  
4 questioning. And I just want to also first  
5 clarify my understanding of your permits. First  
6 of all, I think you said that your oldest  
7 permit, and I'm not sure if you said a water  
8 right number, but is it -- is it 26935, does  
9 that sound like your -- one of your permits?  
10 **A. It's going to be the lowest number, yeah.**  
11 Q. And I think you said that's a 1976 permit; is  
12 that right?  
13 **A. '76, '77, I don't remember exactly; it was right**  
14 **after the creation of the GMD, as I recall.**  
15 Q. And just -- just for a clear record here, so all  
16 your permits that we're talking about that you  
17 testified to, they would have predated --  
18 **A. Sorry, please repeat.**  
19 Q. I'll try again. All of your permits would have  
20 predated the City of Wichita's AMC proposal, is  
21 that right, just for a clear record?  
22 **A. Yeah. Yes.**  
23 Q. And when you applied for one of your permits --  
24 when you applied for one of your permits, did  
25 you have to have a safe yield analysis conducted

1 with -- if there's a drawdown of the aquifer  
2 below the minimum index levels, is your concern  
3 limited to just chloride, or are you also  
4 concerned about the possible impact with other  
5 contaminants as well?  
6 **A. I -- I would be concerned given the fact that**  
7 **the 303(d) list from Yoder on down lists the**  
8 **selenium and phosphorous, that if we really**  
9 **start seeing a massive inflow from the river**  
10 **into the Equus Beds from, you know, the**  
11 **drawdown, whereas the phosphorous might be**  
12 **considered a nutrient if it's pumped out and**  
13 **applied to the crop, the selenium certainly**  
14 **wouldn't be, it would be a micronutrient, if it**  
15 **was necessary at all, so -- until it reached**  
16 **some sort of a threat level. But it would be**  
17 **advisable, I think, to try and keep an eye on**  
18 **those kind of situations as to what else might**  
19 **be occurring.**  
20 I know western Kansas has some -- some of  
21 those kind of issues with water coming out of  
22 the John Redmond Reservoir that not only is it  
23 volume issues, but the water that they seem to  
24 receive, and I think Mr. Austin testified to  
25 that this morning, that out there water coming

1 when you applied?  
2 **A. As I recall, I think we had to have safe yield**  
3 **analysis on all of them because that was one --**  
4 **that was one of the first tenets of the creation**  
5 **of the GMD2 was to create safe yield policies to**  
6 **try to protect from further over-appropriation**  
7 **of the groundwater aquifer.**  
8 Q. And did you serve on the GMD board? Is that  
9 correct?  
10 **A. No, I have not ever served on the GMD board.**  
11 Q. Okay. And -- but from your experience, is that  
12 one of your concerns here, that the City of  
13 Wichita should have had safe yield analysis  
14 conducted on their permits, is that one of your  
15 concerns as well?  
16 **A. I think anytime that somebody is applying for a**  
17 **water permit in the Equus Beds, given the**  
18 **fragility of our system, and we are blessed that**  
19 **we have enough rainfall normally in this area to**  
20 **get 5, 6 inches, whatever, of recharge per year**  
21 **as opposed to western Kansas where they have**  
22 **consistently for a long time been mining water,**  
23 **we at least have a fighting chance here to keep**  
24 **in balance and maintain this aquifer for a long**  
25 **time, and I think it's in everybody's best**

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1 **interest to do what we can to protect that**  
 2 **balance. And if that means, you know,**  
 3 **utilizing, you know, the two-mile circle and**  
 4 **trying to control over-usage or over-pumpage of**  
 5 **it, then I think that's a good thing.**  
 6 Q. I want to circle back briefly to what you said  
 7 before about being involved, you know, in some  
 8 sense in an impairment investigation by the  
 9 Division of Water Resources and sometimes  
 10 occasionally being consulted on water quality  
 11 issues. And also your testimony about the  
 12 interplay between the Division of Water  
 13 Resources and the EPA, KDHE, a number of  
 14 different agencies. Let me ask you this:  
 15 When -- are you familiar with the impairment  
 16 investigation process, in other words, someone  
 17 complains their water right is impaired, they  
 18 complain to DWR, there's an impairment, DWR does  
 19 an investigation? When I say that, do you know  
 20 what I'm talking about?  
 21 **A. Yes, usually they look at the water rights and**  
 22 **what's being done and ask for some sort of**  
 23 **demonstration of the impairment that's**  
 24 **occurring, and then I presume they do the**  
 25 **investigation to determine whether or not the --**

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1 **the impairment actually exists and then take**  
 2 **appropriate action regard to it.**  
 3 Q. So from your experience and involvement in  
 4 impairment investigation --  
 5 **MS. MURRAY:** I'm sorry, I have -- I  
 6 don't know if it's an objection, per se,  
 7 but I just wanted to clarify, I guess, to  
 8 the extent that Mr. Stucky's questioning is  
 9 getting at the witness' knowledge of DWR's  
 10 impairment procedures, I guess if we can  
 11 all stipulate that he maybe doesn't have a  
 12 perfect knowledge of what that is and  
 13 you're asking only as to his experience, I  
 14 guess I'm okay with it, but I just want  
 15 to -- want to get that on the record.  
 16 **MR. STUCKY:** I'll also stipulate I'm  
 17 just asking about his experience with that  
 18 process. And in a very general sense.  
 19 **MS. MURRAY:** Okay.  
 20 **PRESIDING OFFICER:** Yes, thank you,  
 21 I'm -- I'm not taking Mr. Basore's  
 22 testimony as -- for the purpose of  
 23 describing the impairment process but his  
 24 experience and his understanding of it.  
 25 **BY MR. STUCKY:**

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1 Q. So, Mr. Basore, my question is this, just to  
 2 boil down where I'm headed with these questions  
 3 as we talk about the interplay with these  
 4 different agencies on an impairment  
 5 investigation, my question is this, from your  
 6 experience and involvement with KDHE, and also  
 7 perhaps your own experience as a water right  
 8 owner, as you experience others that may have  
 9 been involved in impairment investigations, is  
 10 that generally a long process, in other words,  
 11 it takes a long time to make that final  
 12 determination?  
 13 **A. Probably most of the impairment situations that**  
 14 **I've been around at all had more to do with**  
 15 **water quality than water quantity. Again,**  
 16 **that's because of the sort of division of labor**  
 17 **that KDHE looks after the water quality and DWR**  
 18 **looks after the water quantity. I would imagine**  
 19 **those would be on an individual case basis,**  
 20 **depends on what the impairment is proposed or**  
 21 **accused of being.**  
 22 **If it's a complicated water quality**  
 23 **pollution thing and there's underground plumes**  
 24 **and there's other things that would have to be**  
 25 **investigated, it could be a much more lengthy**

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1 **process involving testing lab results, analysis,**  
 2 **you know, qualification, quantification, those**  
 3 **sorts of things, as opposed to an impairment**  
 4 **that somebody's blocking streamflow upstream**  
 5 **from me and my water right's been impaired and**  
 6 **it's a pretty simple, you know, probably**  
 7 **question to figure out is it being blocked or is**  
 8 **it not.**  
 9 Q. Mr. Basore, you've been in the room a lot of the  
 10 time during the testimony, and I think you were  
 11 in the room at least during the bulk of the  
 12 testimony involving the City of Wichita. Do you  
 13 recall some testimony from various witnesses  
 14 from the City of Wichita where they stated that  
 15 in the event it was determined that there may be  
 16 issues with, I guess, the saturated thickness in  
 17 the aquifer or water quality or things of that  
 18 nature, there was a remedy in the sense that  
 19 impairment investigations could be done in the  
 20 future? Do you recall some of that testimony  
 21 and some of that discussion?  
 22 **A. Yes, as I recall, and it sort of indicated that**  
 23 **the City would maybe only respond after the**  
 24 **fact; that if somebody complained that they were**  
 25 **suffering an impairment because of the ACMs, or**

1 **whatever it was, that the City would sort of**  
2 **investigate after the fact, and if they were**  
3 **within, I want to say 660 feet of a city well**  
4 **and could demonstrate that they were being**  
5 **impaired that the City would deepen their well,**  
6 **provide a new well, provide them with some other**  
7 **alternative water source or something to remedy**  
8 **that particular situation. But that seemed to**  
9 **be a very limited ability to remedy, and it was**  
10 **only after the fact. There wasn't much in --**  
11 **offered in the way of pre-preparation or -- or**  
12 **protection ahead of time.**

13 Q. On the context of what you just said, given the  
14 fact that the impairment investigation can take  
15 awhile and you said that you rely on your water  
16 for your very way of life, for your livelihood,  
17 would an impairment investigation that takes a  
18 long time, does that feel very satisfying as a  
19 landowner versus analyzing these issues up  
20 front?

21 A. No, certainly not. When we -- when I suffered  
22 that well collapse, if you will, and we had to  
23 drill a new one, had to go through the  
24 permitting process of, one, to move the point of  
25 diversion 50 feet, whatever it was we did, plug

1 just drill a well deeper in the future, but I  
2 think you said something from your own  
3 experience with the well collapse and some  
4 things of that nature that that doesn't sound  
5 like that's a very satisfying response for you  
6 either and it's not something that would always  
7 be viable for -- for you as a water right holder  
8 and irrigator?

9 A. In my case --

10 Q. Is that true? I think you're on mute.

11 A. In my case, my irrigation wells and my domestic  
12 wells are to such a depth that there's -- you  
13 can't drill deeper and get water because there's  
14 no deeper to go to, I'm pretty much at the  
15 bottom of the aquifer. I understand if somebody  
16 has a shallow or domestic well or even  
17 irrigation well in the well field where the  
18 drawdown might be much more substantial than  
19 10 feet where, indeed, they might end up with a  
20 dry hole, if it were, where drilling a new well  
21 to a deeper depth might be able to provide them  
22 with a water supply, that may be entirely  
23 possible.

24 In 19 -- in the 1940s when Wichita first  
25 came out here and started drilling wells in the

1 the old well, drill a new one, I had to hire a  
2 certified geologist, hydrogeologist who was well  
3 known in the municipal field for doing municipal  
4 wells, which are drilled and cased and built to  
5 a higher standard than an irrigation well is,  
6 and I had to pay him several thousand dollars to  
7 figure out exactly what sort of screening size  
8 and what sort of gravel size we needed in it and  
9 got it all done, and I will say I think GMD  
10 tried to help us get through that process as  
11 rapidly as we could.

12 It was during a growing season when it  
13 happened, it was not in the middle of a drought  
14 but it was in a growing season, so we were  
15 without the ability to irrigate for ten days,  
16 two weeks, whatever. I can't tell you exactly  
17 what negative impacts it might have had on the  
18 crop, it's been too many years back, but we --  
19 we felt fortunate to get out of it without  
20 having a more serious situation than what we  
21 did.

22 Q. So you were already perhaps asked this question,  
23 but I may have missed the answer somehow, you  
24 know, the City also said another potential  
25 remedy when you were in the room was to simply

1 Equus Beds, there were numerous individuals who  
2 had shallow sand point wells in the well field  
3 area that suddenly didn't have water and the  
4 City was persuaded to come out and provide them  
5 with a deeper well; and I don't know if they  
6 drilled those or if they drove sand points or  
7 what -- what they did to remedy, but my  
8 understanding was they did provide deeper wells  
9 to replace the shallow ones that no longer were  
10 working.

11 Q. Okay. You were maybe asked some questions about  
12 whether or not you had been asked to sell water  
13 or -- or water rights before. Were you asked  
14 some questions about that, I'm sorry, just also  
15 to clarify?

16 A. I don't think I've been asked under my  
17 testimony. It's one of the things I did discuss  
18 with counsel as to whether or not I had been  
19 offered. No, the City has never approached me  
20 about buying any water rights. I know there is  
21 a square mile of section that is two miles east  
22 of me that -- and happens to be a landowner who  
23 lived in Wichita basically sold the water rights  
24 to the City some decades ago. But my  
25 understanding is that the farm tenant operator

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1 still gets to utilize those rights for  
 2 irrigation, and the City has not put down wells  
 3 to access that water to this point.  
 4 So I know water rights did become a  
 5 property right, which was a step in the right  
 6 direction. I think people were surprised,  
 7 disappointed, whatever the words were, in 1940  
 8 when the State changed from a riparian water law  
 9 to an appropriated water right law, and a lot of  
 10 people in the Equus Beds assumed they owned  
 11 everything under their feet, the land, the sand,  
 12 the gravel, the oil, the gas, the water, the  
 13 gold, whatever might be there, and then suddenly  
 14 there was a change at the state in the water  
 15 law, and Wichita was out here accessing and  
 16 removing water under their land and they were  
 17 not getting paid for it because it was not a  
 18 property right. They didn't have a water right  
 19 that was -- you know, that they could stand on.  
 20 So --  
 21 Q. So -- so just to clarify here, I -- to clarify  
 22 for me, based on being approached to purchase or  
 23 your -- your experience as a water owner, have  
 24 you gained a sense for what the water is worth,  
 25 or is that something that you don't have

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1 experience on?  
 2 **A. I can't tell you what -- I can't speculate on**  
 3 **what a water right might be worth to somebody.**  
 4 **The direct effect of what we would see is a**  
 5 **diminution of the land value that has a water**  
 6 **right under it and associated with it. I think**  
 7 **it's kind of similar to other mineral rights,**  
 8 **oil and gas, that you can sell the surface and**  
 9 **reserve the minerals or sell them separately and**  
 10 **reserve the land; I think the water right, my**  
 11 **understanding, is would work pretty similar in**  
 12 **the same fashion, but to be able to say, yeah,**  
 13 **your water right is worth so many dollars an**  
 14 **acre-foot, I have no clue as to how you would**  
 15 **arrive at that. Like I say, the only way to**  
 16 **really put a value to it is what's the value of**  
 17 **that irrigated land versus what would it sell**  
 18 **for if it was dry land without a water right,**  
 19 **and the difference between the two would be the**  
 20 **value of the water right.**  
 21 Q. And so in that -- in that general sense, you  
 22 have an understanding of what irrigated land  
 23 usually sells for versus dry land in your area;  
 24 is that correct? That's something you  
 25 traditionally have followed as a landowner; is

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1 that right?  
 2 **A. I try to, there has not been a lot of recent**  
 3 **land sales right around in my area. Land tends**  
 4 **to be held pretty closely, and -- and we have --**  
 5 **again, you know, I'm sitting on a century farm.**  
 6 **My, you know, great uncle ended up in ownership**  
 7 **of the land I sit on in 1910, and they had**  
 8 **leased it at -- for years ahead of that, and**  
 9 **there are other multiple generation landowners**  
 10 **around, that land is held fairly tightly.**  
 11 **My understanding is land values are still**  
 12 **pretty high, and there are people in the current**  
 13 **COVID deal who have got out of the stockmarket**  
 14 **and are looking around and they think land is a**  
 15 **great value to invest in. So I couldn't quote**  
 16 **you accurately a price today for what my land is**  
 17 **worth. You'd have to get ahold of a Realtor**  
 18 **who's in the market on a frequent basis to be**  
 19 **able to -- to give you that kind of information.**  
 20 **I have kind of a sense for it but --**  
 21 Q. Yeah, and I'm asking for your general sense  
 22 based on, you know, the last few years; I'm not  
 23 talking about the sense from, you know, a week  
 24 ago what it's worth. In a general sense, what  
 25 's the difference in value between an irrigated

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1 parcel of land and a nonirrigated parcel of  
 2 land? Mr. Basore?  
 3 **A. Based on several years ago, I would say it would**  
 4 **certainly be a third less for the dry land. I**  
 5 **mean, there is intrinsic value in owning land,**  
 6 **there is a bit of a premium on owning land close**  
 7 **to Wichita, which makes it very accessible to an**  
 8 **absentee landowner, so people are willing to pay**  
 9 **more for dry land out here than they are further**  
 10 **west. And crop productivity is higher here**  
 11 **because the rainfall amount is higher. But I**  
 12 **would certainly say it would be a third less**  
 13 **probably, dry land as opposed to irrigation.**  
 14 **Other people may tell me that's way high or way**  
 15 **low and I would have a hard time arguing.**  
 16 Q. Yeah, so in other words and applying that to  
 17 your own land, if -- if you lost your water  
 18 right, would you believe that your land value  
 19 would decrease by a third or a half or something  
 20 of that nature?  
 21 **A. Yes, I would expect that to be true.**  
 22 Q. And so in other words, if the City of Wichita's  
 23 proposal causes drastic enough impacts to your  
 24 water right that you essentially lose your  
 25 ability to use it, that would cause you

1 significant economic harm; is that true?  
 2 **A. Certainly, I think it would be inadvertent**  
 3 **taking, however you want to characterize it, the**  
 4 **same for -- if the water becomes polluted to**  
 5 **where I can't use the water, the water right**  
 6 **itself would lose value, let alone the -- and it**  
 7 **would be a twofold impact on the land that, one,**  
 8 **it would lose value as -- as just an asset with**  
 9 **value, but it would also lose productivity,**  
 10 **which means future income off of that land is**  
 11 **going to be greatly reduced by a third, by a**  
 12 **half, going back to dryland crops as opposed to**  
 13 **irrigated corn or soybeans. There would be a**  
 14 **direct impact from an income point of view and**  
 15 **from an asset value point of view.**  
 16 Q. And I don't ask you to speak conclusively for  
 17 the rest of the Intervenors but let me ask you  
 18 this: If there was a demonstration or a proof  
 19 that the City lowering the minimum index level  
 20 and withdrawing aquifer maintenance credit  
 21 resulted in -- in taking away of water from you  
 22 and other Intervenors, would that economically  
 23 impact other Intervenors beyond yourself?  
 24 **A. Oh, certainly, everybody who would be impacted**  
 25 **by the area of -- of reduced level in the**

1 **aquifer, whether that's 10 feet or whether it's**  
 2 **40 feet, would be impacted, and those who lost**  
 3 **the ability to irrigate would be impacted even**  
 4 **worse, or those who had to pump from a greater**  
 5 **depth would have to pay a lot more for the power**  
 6 **supply to do that with.**  
 7 **We, in the last, oh, it's been five years**  
 8 **ago or so, the Halstead-Mount Hope Co-Op**  
 9 **Association built a new grain elevator just west**  
 10 **of Bentley, and it's in the heart of an**  
 11 **irrigated area on north of the Big Arkansas**  
 12 **River in the Equus Beds, and they do a**  
 13 **land-office business in taking grain from all**  
 14 **the farms around. And certainly if we went back**  
 15 **to dryland farming where the crop yields were**  
 16 **reduced by a third, by a half, whatever it might**  
 17 **be, that elevator, that co-op association would**  
 18 **also suffer a loss of income, one, from the**  
 19 **volume of crops they would no longer handle, but**  
 20 **also there would be less demand for their**  
 21 **fertilizers, seeds, herbicides, and those sorts**  
 22 **of inputs and fuel. A lot of diesel fuel is**  
 23 **used to power irrigation wells, and propane.**  
 24 **And Everygy and the REA might feel it 'cause**  
 25 **there are any number of pivots that are run off**

1 **of three-phase electricity directly without a**  
 2 **ground power unit.**  
 3 Q. Okay. You mentioned that your land has been in  
 4 your family for years and years, so in other  
 5 words, if you were to lose that water right,  
 6 that would interfere with the investment you've  
 7 made in that land and your expect -- expectation  
 8 that you could have that future value or -- or  
 9 investment in your land in the future; is that  
 10 true? Mr. Basore, is that true that if you  
 11 lost --  
 12 **A. Yes, absolutely it would -- it would impact**  
 13 **future value of it, and it would at the same**  
 14 **time impact probably the ability of my kids and**  
 15 **grandkids to continue on to farm it within the**  
 16 **family as it has been farmed for over 100 years.**  
 17 **MR. STUCKY:** All right. No further  
 18 questions. Thank you, Mr. Basore.  
 19 **PRESIDING OFFICER:** Ms. Wendling?  
 20 **MS. WENDLING:** I believe we were  
 21 suppose to quit at 4:30, but I don't have  
 22 any further questions.  
 23 **PRESIDING OFFICER:** Okay. It is  
 24 4:30, we were supposed to yield the room at  
 25 4:30. Real quickly, I'll ask if there are

1 other questions, and if there are, we'll  
 2 take them up in the morning. And if not,  
 3 then I can dismiss our witness. But does  
 4 anyone anticipate more questions for  
 5 Mr. Basore tomorrow morning? Hearing --  
 6 hearing none, then this is a good time to  
 7 take a break for the day. Mr. Basore,  
 8 you're excused, thank you.  
 9 And we will go off the record and recess  
 10 until tomorrow morning at 8:30. Thank you,  
 11 everyone.  
 12 (Whereupon, the proceedings were  
 13 adjourned at 4:31 p.m.)  
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C E R T I F I C A T E

STATE OF KANSAS )  
SEDGWICK COUNTY ) ss:

I, Nancy L. Rambo, a Certified Shorthand Reporter, within and for the State of Kansas, do hereby certify that the foregoing is a true and correct transcript of the proceedings had at the time and place hereinbefore set forth.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, nor am I a relative or employee of such attorney or counsel, nor am I financially interested in the action.

WITNESS my hand and official seal at Wichita, Sedgwick County, Kansas, this 18th day of February, 2021.

NANCY L. RAMBO, R.P.R., C.S.R.  
Registered Professional Reporter  
Certified Shorthand Reporter

Costs:



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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storag*

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*Formal Hearing - Volume XIII*  
*February 4, 2021*

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1 STATE OF KANSAS  
2 BEFORE THE DIVISION OF WATER RESOURCES  
3 KANSAS DEPARTMENT OF AGRICULTURE  
4  
5 In the Matter of the City )  
6 of Wichita's Phase II ) Case No.  
7 Aquifer Storage and ) 18 WATER 14014  
8 Recovery Project in Harvey )  
9 and Sedgwick Counties, )  
10 Kansas, )  
11 Pursuant to K.S.A. 82a-1901  
12 and K.A.R. 5-14-3a  
13  
14  
15 FORMAL HEARING  
16 VOLUME XIII  
17  
18 This matter came on for Formal Hearing  
19 before Constance C. Owen, Presiding Officer, at  
20 the Kansas Learning Center for Health, 505 Main  
21 Street, Halstead, Harvey County, Kansas,  
22 commencing at 8:31 a.m., on the 4th day of  
23 February, 2021.  
24  
25

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1 A P P E A R A N C E S  
2  
3 City of Wichita, Department of Public  
4 Works and Utilities, appears via Zoom  
5 Videoconference by their attorney, Brian K.  
6 McLeod, Deputy City Attorney, 435 North Main, 13th  
7 Floor, Wichita, Kansas 67202.  
8  
9 Equus Beds Groundwater Management District  
10 No. 2 appears via Zoom Videoconference by their  
11 attorneys, Thomas A. Adrian and David J. Stucky,  
12 Adrian & Pankratz, 301 North Main, Suite 400,  
13 Newton, Kansas 67114.  
14  
15 Division of Water Resources appears via  
16 Zoom Videoconference by their attorney, Stephanie  
17 Murray, Kansas Department of Agriculture, 1320  
18 Research Park Drive, Manhattan Kansas 66502.  
19  
20 Intervenors appear by their attorney,  
21 Tessa M. Wendling, 1010 Chestnut Street, Halstead,  
22 Kansas 67056.  
23  
24  
25

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1 INDEX OF EXAMINATION  
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3 JOSH CARMICHAEL  
4 DIRECT EXAMINATION BY MS. WENDLING 3323  
5 CROSS-EXAMINATION BY MR. MCLEOD 3342  
6 CROSS-EXAMINATION BY MR. STUCKY 3361  
7 REDIRECT EXAMINATION BY MS. WENDLING 3374  
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10 BILL CARP  
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16  
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1 **PRESIDING OFFICER:** We're now on the  
2 record. This is February 3rd, 2021, this  
3 is the -- I'm sorry, I'm back -- I'm  
4 reading my notes from yesterday. It's  
5 February 4th, 2021, this is the  
6 continuation of the administrative hearing  
7 for the City of Wichita's request to modify  
8 their aquifer storage and recovery project,  
9 Phase II. And we are in the process of the  
10 Intervenors presenting their case, so  
11 without further ado, I will turn this over  
12 to Tessa.  
13 **MS. WENDLING:** We will start by  
14 calling Josh Carmichael.  
15  
16 JOSH CARMICHAEL,  
17 having been first duly sworn, was  
18 examined and testified as follows:  
19  
20 **DIRECT EXAMINATION**  
21 **BY MS. WENDLING:**  
22 Q. All right. Will you please state your name for  
23 the record.  
24 **A. My name is Josh Carmichael.**  
25 Q. And do we want to check the echo?

1 Can you state where in the basin storage  
2 area you live?  
3 **A. According to the map that I have seen, I am**  
4 **right on the southern edge of index cell 32.**  
5 Q. Do you want to just state your address?  
6 **A. 13508 West 101st Street North.**  
7 Q. And is that in the Bentley area?  
8 **A. That is in the Bentley area.**  
9 Q. And how long have you lived in that area?  
10 **A. As of February 17th of this year, I will have**  
11 **lived within 500 feet of that area of the Equus**  
12 **Beds for 38 years.**  
13 Q. Referring to Intervenors' Exhibit Number --  
14 what's been marked for identification as 1, or  
15 tab number 1, I guess, do you see a map with  
16 your name on it?  
17 **A. I do.**  
18 Q. And does the triangle with your name roughly  
19 reflect the area of your domestic well?  
20 **A. It does.**  
21 Q. Why do you have a domestic well?  
22 **A. It is my only source of water in that area.**  
23 Q. And do you have a secondary or alternative  
24 source?  
25 **A. I have none at this time.**

1 the assurance you need regarding the  
2 sustainability of your well?  
3 **A. I'm not sure that a guarantee that I will always**  
4 **have water would make me feel that my well would**  
5 **always be sustainable. If it was to ever become**  
6 **impacted by chlorides or go dry, even if I do**  
7 **have another source of water, my well would not**  
8 **be sustainable.**  
9 Q. Are you at all concerned about the length of  
10 time it would take during a drought to remedy  
11 any issues you experience with your domestic  
12 well?  
13 **A. Of course I am. Nothing happens overnight and I**  
14 **get that, but when it comes to water, it has to**  
15 **happen overnight. It's in my opinion that water**  
16 **is the lifeblood of all of us. Without it, a**  
17 **few hours becomes a big deal.**  
18 Q. Can you tell us what your occupation is?  
19 **A. I currently run a center pivot irrigation**  
20 **business.**  
21 Q. And how long have you been doing that?  
22 **A. I think I started in 2011, 2012, somewhere in**  
23 **that time frame.**  
24 Q. Was there anything specific that drew you into  
25 the irrigation business?

1 Q. And to your knowledge, is your well within  
2 660 feet of any City of Wichita well?  
3 **A. It is not.**  
4 Q. How would you and your family be impacted if  
5 your domestic well is no longer able to access  
6 quality water?  
7 **A. It would be life altering.**  
8 Q. Would you care to expand on that?  
9 **A. Pretty -- pretty broad question. So if we run**  
10 **out of water, obviously either we have to get**  
11 **water hauled in, we have to have rural water, or**  
12 **we have to up and leave.**  
13 Q. Have you heard any discussion throughout these  
14 hearings or elsewhere of a potential remedy the  
15 City of Wichita would provide to those domestic  
16 wells impacted by the ASR project?  
17 **A. I have not, and that was one of the initial**  
18 **things that I found alarming. In the Equus Beds**  
19 **well field, there is gobs and gobs and gobs of**  
20 **domestic wells that would not be protected but**  
21 **are in the basin storage area. They're just**  
22 **simply not within 660 feet of a City of Wichita**  
23 **well.**  
24 Q. And if the City offers to remedy those impacted  
25 regardless of the distance, does that give you

1 **A. I seen what can actually be done with a drop of**  
2 **water and how we could become more efficient**  
3 **with it and the technologies that are coming**  
4 **down the pipeline to help us be more efficient**  
5 **with it, and it swooped me in.**  
6 Q. What type of work do you do for your customers?  
7 **A. We -- we do not drill wells, but we do work on**  
8 **the pumps, the column, the motors up top, the**  
9 **center pivots, and the technology that goes**  
10 **throughout the whole system.**  
11 Q. What are some of the things that you've  
12 implemented to help your customers conserve  
13 water?  
14 **A. Oh, there's many facets that we have done. In**  
15 **my opinion, the biggest one is sprinkler**  
16 **efficiencies. We went from high-pressure**  
17 **systems down to low-pressure systems, we've**  
18 **increased our efficiency out of those sprinklers**  
19 **dramatically, trying to make every drop count.**  
20 **And on top of that, we have added technologies,**  
21 **whether it is variable rate irrigation, soil**  
22 **moisture probes, or monitoring water meters to**  
23 **know how much water we're pumping, when we're**  
24 **pumping it, and the totalizer for us.**  
25 Q. Who pays for all of these technology efforts?

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1 **A. My customers would be the ones that would pay**  
 2 **for all of these.**  
 3 Q. And what would motivate them to spend money on  
 4 conservation?  
 5 **A. Well, contrary to the popular belief, it costs a**  
 6 **lot of money to irrigate. You have your pumping**  
 7 **cost and you have your maintenance cost, and**  
 8 **also if you're -- if you're over-watering,**  
 9 **you're losing yield, so there -- there's a huge**  
 10 **cost that seems to always go duly unnoted.**  
 11 Q. You mentioned that you don't personally dig  
 12 wells, but do you have quite a bit of experience  
 13 working with wells in general?  
 14 **A. I do.**  
 15 Q. Would you say -- have you experienced  
 16 differences between wells throughout the basin  
 17 storage area?  
 18 **A. That would be correct.**  
 19 Q. And can you elaborate on any of those  
 20 differences?  
 21 **A. I would say the -- of course, the closer you get**  
 22 **to the river, you get into the salts. The**  
 23 **closer you get to Halstead, you get into iron**  
 24 **bacteria. The closer you get to Burrton, you**  
 25 **get into salts and manganese. That would be the**

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1 **differences that I see between the wells. Every**  
 2 **well is different, every well that's in the same**  
 3 **field is different. That's -- so, yeah, there's**  
 4 **a lot of differences.**  
 5 Q. Do you happen to know what the approximate cost  
 6 is of putting in a well?  
 7 **A. Last I knew was upwards of \$100 a foot just to**  
 8 **drill the well; that does not include any of**  
 9 **your pumping equipment.**  
 10 Q. And do you know approximately how long it takes  
 11 to drill a well?  
 12 **A. Somewhat of a loaded question, the time frame of**  
 13 **when the rig actually gets to the field and has**  
 14 **completed the hole, cased it, and ready to go, I**  
 15 **would say two to three days. The issue that we**  
 16 **have right now is the backlog of wells that need**  
 17 **drilled. Most drilling companies in our area**  
 18 **are three to four months out right now.**  
 19 Q. If we're three to four months out during a  
 20 normal period, would you estimate that that  
 21 would increase during a period of a drought?  
 22 **A. Of course it will increase drastically during a**  
 23 **drought, as we seen in 2011, 2012.**  
 24 Q. Irrigation systems, I understand there are  
 25 different types of systems, can you tell us

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1 anything about the cost of putting in an  
 2 irrigation system?  
 3 **A. To start a complete new project, you're probably**  
 4 **looking at upwards of around 80 to \$100,000**  
 5 **based on how the system is set up, no well**  
 6 **included and no piping or electricity included.**  
 7 Q. And if that system loses access to water, does  
 8 it retain that value?  
 9 **A. Somewhat. The depreciation schedule on it is**  
 10 **quite drastic the first couple of years, so it**  
 11 **wouldn't be anything like buying it to set it**  
 12 **there for 20 years.**  
 13 Q. Have you observed in any of the systems you've  
 14 worked on an impact to the system from chloride?  
 15 **A. Yeah, most definitely. We've -- we've had to**  
 16 **make the switch to a different kind of piping so**  
 17 **we can try to get more years out of the systems.**  
 18 **Most of the ones that you see are galvanized**  
 19 **pipe, but we're going with lined pipe or we are**  
 20 **putting PVC pipe underneath the galvanized pipe**  
 21 **strictly due to the chloride issue.**  
 22 Q. To your knowledge, if an irrigator invests in  
 23 conservation efforts, what happens to the  
 24 reduction, the water not used?  
 25 **A. To my knowledge, it's on a year-by-year base,**

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1 **it's kind of a use-it-or-lose-it annual**  
 2 **accounting method.**  
 3 Q. You mentioned that you were just getting started  
 4 in the 2011-ish period. During that, well, I  
 5 guess drought period of 2011 and '12, did you  
 6 notice any impact to your -- to irrigation  
 7 systems?  
 8 **A. Yeah, there was quite a few in the area that put**  
 9 **excessive hours on trying to keep their crops**  
 10 **alive; a lot of those even let half of the pivot**  
 11 **go or maybe even all of the pivot and just try**  
 12 **to keep up with what they could and use the**  
 13 **water as efficiently as they could. Kind of**  
 14 **like Rich said yesterday, if there was a corn**  
 15 **rotation, a lot of that got chopped for silage**  
 16 **for cattle. Really -- really eye-opening**  
 17 **experience to see somebody trying to save that**  
 18 **type of an investment.**  
 19 Q. When you say trying to save that type of  
 20 investment, can you elaborate on what you mean  
 21 by that?  
 22 **A. They were willing to give up half of their**  
 23 **initial investment to try to make a crop out of**  
 24 **the other half of it.**  
 25 Q. So for you personally having a domestic well but

1 not your own crops, are you making investments  
2 in your property and land based on having access  
3 to water?  
4 **A. Can you ask that question another way?**  
5 Q. Have you made investments in your home based on  
6 having access to water that you would not have  
7 made if you did not have access to water?  
8 **A. Yeah, we have indoor plumbing. We -- when I**  
9 **bought that house in 2006, maybe earlier, the**  
10 **house was built in the '70s, we went all through**  
11 **it, put in updated appliances, fixtures,**  
12 **toilets. That was not something that we got any**  
13 **money for or a pat on the back that says we did**  
14 **good; we did it because we thought it was right.**  
15 Q. And do you know the value of your house if you  
16 no longer have water?  
17 **A. I'm not sure that I would know the value of it,**  
18 **but I would say that it would be very, very**  
19 **minimal.**  
20 Q. Are you familiar with the -- Wichita's ASR  
21 project in general?  
22 **A. I am.**  
23 Q. And what is your knowledge of the basin storage  
24 area?  
25 **A. My knowledge of the basin storage area is a**

1 **little bit limited due to the fact that I'm not**  
2 **sure exactly where it's at.**  
3 Q. Where it's at in the aquifer or where it's at in  
4 general?  
5 **A. Where it is at in the aquifer.**  
6 Q. And what is your understanding of the function  
7 of the basin storage area?  
8 **A. My understanding is that the basin storage area**  
9 **is supposed to be an unsaturated thickness,**  
10 **whether that's from the ground down or maybe**  
11 **possibly even above the ground, I'm not sure,**  
12 **but that's my opinion on what it is.**  
13 Q. And if you understand lowering -- that the  
14 minimum index level is the bottom of the basin  
15 storage area, do you have concerns with lowering  
16 that minimum index level?  
17 **A. Most definitely, yeah, I have concerns with**  
18 **that. Back in 1993 when GMD2 and the City came**  
19 **together, and I -- I do believe DWR was involved**  
20 **in this process as well, they established this**  
21 **level for a reason. I don't -- I don't really**  
22 **have any of the facts about why it was**  
23 **established in front of me, but from what I**  
24 **recall, that was one of the lowest rates that**  
25 **the aquifer reached due to pumping. In 1993,**

1 **the City agreed to this, I think they might even**  
2 **have built some management plans off of it.**  
3 **That's one of the alarming concerns for me is if**  
4 **it was so detrimental in 1993, what has changed**  
5 **to make it okay today?**  
6 Q. And in reviewing the proposal and attending  
7 these hearings, have you heard anything that  
8 alleviates that concern?  
9 **A. I have not.**  
10 Q. Would you like additional information to show  
11 that going below the '93 levels is sustainable  
12 for the aquifer?  
13 **A. Most definitely. I try -- I'm basing my**  
14 **opinions off of past work that was done by the**  
15 **City and Burns & Mac, they told us that ASR II**  
16 **was going to put so many acre-feet back in the**  
17 **ground. I think they might have achieved 25**  
18 **percent of that, so they were 75 percent wrong.**  
19 **If this model is 75 percent wrong, I think it's**  
20 **extremely harmful for the aquifer.**  
21 Q. In the City's proposal when they discuss the  
22 lowered minimum index levels, they also show the  
23 remaining saturated thickness in the area. What  
24 comfort level does knowing the remaining  
25 saturated thickness give you regarding this

1 proposal?  
2 **A. I haven't seen what their saturated thickness**  
3 **would be in my index cell, but I can't say that**  
4 **I would be comfortable with it even if I had the**  
5 **figure in front of me.**  
6 Q. Yesterday Mr. Basore talked about having  
7 available water, yet being contaminated by  
8 chloride due to his proximity to the Arkansas  
9 River. Is that a concern you similarly face?  
10 **A. Most definitely. I think Mr. Basore had stated**  
11 **and you had shown him on a map that the salt**  
12 **plume from the Big River was moving to the north**  
13 **and to the east, and index level 32 would be**  
14 **north and east of Mr. Basore's location.**  
15 Q. That was in District's Exhibit Number 68, I  
16 believe.  
17 **A. This one?**  
18 Q. Yes. Okay. It is towards the back, figure  
19 number 8 of Mr. Romero's expert report. It  
20 should be the last figure in his.  
21 **A. Figure 8.**  
22 Q. Do you believe that's the image we spoke -- I  
23 spoke about with Mr. Basore yesterday?  
24 **A. Yes.**  
25 Q. And in looking at those lines and finding index

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1 well 32, which would be close to you in index  
 2 cell 32, what do you notice about the color of  
 3 lines?  
 4 **A. The colors of the lines seem to be right on top**  
 5 **of me.**  
 6 Q. And does that increase your concern regarding  
 7 chloride movement?  
 8 **A. Most definitely.**  
 9 Q. Do you -- or have you looked at what chloride  
 10 might do to your domestic well?  
 11 **A. I haven't looked at the exact things, I guess,**  
 12 **that it could do to my household. Through my**  
 13 **work in irrigation, I guess it's kind of common**  
 14 **knowledge for me to what it could do, rusty**  
 15 **pipes, rusty valves, would be really hard to**  
 16 **get dishes without water spots, have an adverse**  
 17 **effect on your health, yeah.**  
 18 Q. The City's proposal also included the component  
 19 of the aquifer maintenance credit. Do you have  
 20 an understanding of how the AMCs would operate?  
 21 **A. Not necessarily. I know we have black water and**  
 22 **we got blue water, and then it -- I'm not sure**  
 23 **where it goes from there. That's the part**  
 24 **that's a little frustrating to me to see how**  
 25 **this water gets mixed together and then we have**

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1 **a new color.**  
 2 Q. Do you understand whether the City would be  
 3 injecting water into the aquifer to accumulate  
 4 these credits?  
 5 **A. I do.**  
 6 Q. What is your understanding?  
 7 **A. My understanding is that they're going to be**  
 8 **pulling water from the river, sending it to**  
 9 **town, and getting a future credit in the well**  
 10 **field for that gallon that they sent to town.**  
 11 Q. Do you know if any other users of the aquifer  
 12 are similarly able to accumulate such credits?  
 13 **A. It's my understanding that all water right**  
 14 **holders in the State of Kansas follow the same**  
 15 **guidelines where it's a use it or lose it on an**  
 16 **annual basis.**  
 17 Q. And does the AMC concept appear consistent with  
 18 that?  
 19 **A. It does not, it would -- it would allow for**  
 20 **banking of future credits that we're not sure**  
 21 **are even in the aquifer.**  
 22 Q. From the proposal and the testimony for this  
 23 water, have you -- do you understand what might  
 24 potentially happen to you or the health of the  
 25 aquifer if the 120,000 acre-feet were withdrawn

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1 from the aquifer?  
 2 **A. There's been evidence that's been supplied**  
 3 **that's supposed to assure me that the water will**  
 4 **be there. Unfortunately, I go back to the**  
 5 **ASR II program where they're going to inject all**  
 6 **this water, they have achieved 25 percent of**  
 7 **that, so I'm not sure that I can rely on this**  
 8 **model.**  
 9 Q. Yesterday, Mr. Basore talked about a lack of  
 10 trust, would you agree with those sentiments?  
 11 **A. I would. And my previous thoughts here, in**  
 12 **1993, we set these levels, the City agreed to**  
 13 **it, DWR agreed to it, City set the management**  
 14 **programs based off of it, showed they're in**  
 15 **favor of it. Now they're not. Is that going to**  
 16 **happen again in five years if this gets**  
 17 **approved, are they going to come back for**  
 18 **another 120,000 acre-feet? I'm not sure.**  
 19 Q. Why did you decide to intervene in this matter?  
 20 **A. I decided to intervene because I felt there was**  
 21 **a lot of unanswered questions, and after --**  
 22 **after listening to all the testimony, I feel**  
 23 **that I have more unanswered questions now. I**  
 24 **don't feel that the City has showed their -- or**  
 25 **bearred their burden of proof to tell us that**

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1 **this really is going to work. I'm worried about**  
 2 **the storing of the AMCs, are -- are they storing**  
 3 **that under my personal property, is that going**  
 4 **to affect me if I were to dig a pool in my back**  
 5 **yard and there's water at 1 foot? Do I get**  
 6 **compensated for water being stored under my**  
 7 **land, like they do with natural gases and stuff**  
 8 **like that?**  
 9 **Being around the well field quite a bit and**  
 10 **the river, I have noticed sinkholes that appear**  
 11 **due to underflow, and I feel that when we are**  
 12 **recharging this at a rate they're trying to do,**  
 13 **they're going to be creating underflow to try to**  
 14 **fill a cone of depression.**  
 15 **Other adverse effects that has not --**  
 16 **nobody's came up with any solutions for, I'm**  
 17 **not -- I'm not sure that I will be covered at my**  
 18 **domestic well since I'm not within 660 feet of**  
 19 **one of their wells. I'm alarmed that they're**  
 20 **trying to switch to all Equus Beds water to**  
 21 **create a hole so they can recharge and not use**  
 22 **Cheney; to me, that's not being a good steward**  
 23 **of the water. Those are some of the key points**  
 24 **of why I chose to intervene.**  
 25 Q. As the one outside of 660 feet, or even for

1 those within the 660 feet, what type of programs  
2 would you like to see in place for those -- for  
3 anyone in Equus Beds impacted by ASR pumping, or  
4 the ASR program?  
5 **A. With -- with a project of this magnitude and the**  
6 **square area that they're wanting to call a basin**  
7 **storage area, I feel that everybody that's in**  
8 **that basin storage area should fall under the**  
9 **660-foot clause, whether it be due to a high**  
10 **water table or to the chloride migration or lack**  
11 **of water.**  
12 Q. And should the burden of proof be on the  
13 individual to prove that they have been  
14 negatively impacted?  
15 **A. No, it should not. To my opinion, that is why**  
16 **we have the Division of Water Resources, they**  
17 **are to work for the people.**  
18 Q. Do you fear there could be a lengthy period of  
19 trying to prove damage and then also  
20 implementing a remedy if something were to  
21 happen?  
22 **A. Most definitely. How long has this hearing been**  
23 **going on?**  
24 Q. Do you think it would be worthwhile to model and  
25 study the maximum possible withdrawal the City

1 **standards.**  
2 Q. Do you believe your customers would want to bank  
3 their water rights if they had the opportunity?  
4 **A. Absolutely, 100 percent, no question about it.**  
5 **MS. WENDLING:** Thank you, I have no  
6 further questions.  
7 **PRESIDING OFFICER:** Okay. Thank  
8 you, sir. Mr. McLeod.  
9 **MR. MCLEOD:** Thank you.  
10  
11 **CROSS-EXAMINATION**  
12 **BY MR. MCLEOD:**  
13 Q. Mr. Carmichael, you indicated that -- that you  
14 don't dig wells. Do you have any licenses as a  
15 well driller?  
16 **A. I do not.**  
17 Q. You indicated in your main testimony that if  
18 your well were impacted by chlorides, it would  
19 not be sustainable. Are you familiar with  
20 reverse osmosis treatment systems that treat  
21 water for salinity?  
22 **A. Very vaguely.**  
23 Q. Have -- have you looked at the possibility of  
24 installing such a system in a domestic well?  
25 **A. I have not.**

1 is seeking from the Equus Beds?  
2 **A. Absolutely, by three different companies.**  
3 Q. I know you've mentioned that you have several  
4 concerns regarding this, are there any concerns  
5 that you have not yet mentioned regarding the  
6 proposal that you'd like to share?  
7 **A. I am a little bit worried about the -- if**  
8 **there's any permit conditions stating that the**  
9 **native rights are used before the ASR credits**  
10 **are used. I tried to look that up last night,**  
11 **and I can't really find anything where there was**  
12 **any permit conditions that are going to be tied**  
13 **to this. In my opinion, a project like this**  
14 **should have quite a few permit conditions.**  
15 Q. And do you have a reason for why you think those  
16 native rights should be used first?  
17 **A. I guess I would base that back on a native water**  
18 **right, you have so many acre-feet per year to**  
19 **use at your discretion on an annual basis, I --**  
20 **the ASRs are going to go into an accounting**  
21 **system of some sort where they can bank those up**  
22 **for all at one time. I just feel that it's --**  
23 **we don't have access to the bank accounting**  
24 **method so we have to use our water right. I**  
25 **feel the City should be held to the same**

1 Q. Do you have any reason to think that you  
2 wouldn't be able to install a reverse osmosis  
3 system in your domestic well if it developed a  
4 chloride problem?  
5 **A. I'm not sure what is required of the system, any**  
6 **infrastructure that is needed, so I -- I really**  
7 **can't answer that question.**  
8 Q. So isn't it really true, Mr. Carmichael, that  
9 you actually don't know if your domestic well  
10 would be sustainable in the event of chloride  
11 impacts because you haven't looked at whether a  
12 reverse osmosis system would solve that issue?  
13 **A. I guess that would be correct, yeah.**  
14 Q. Mr. Carmichael, did you read the City's proposal  
15 that was submitted at the start of this whole  
16 matter?  
17 **A. Bits and pieces and attended the hearing.**  
18 Q. And you've mentioned that -- that in connection  
19 with ASR II there was a forward-looking  
20 projection and the City has only achieved  
21 20 percent of the recharge that it initially  
22 thought it would be able to achieve with the  
23 ASR II project. Do you know why that is?  
24 **A. I'm not sure.**  
25 Q. Do you know what the state of the aquifer is

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1 today, Mr. Carmichael, in terms of -- of how it  
 2 compares to predevelopment levels and whether  
 3 there's actually any space in the aquifer  
 4 currently that the City could put recharge in?  
 5 **A. I'm not for sure of the state of the aquifer at**  
 6 **the City's injection wells, but I am familiar**  
 7 **with the aquifer near my domestic property.**  
 8 Q. Okay. And you haven't examined or investigated  
 9 at all why the recharge goal initially projected  
 10 has been 75 percent underachieved, have you?  
 11 **A. I have tried but have come up with no answer.**  
 12 Q. So you haven't seen any information indicating  
 13 that it's -- it's tied to the aquifer simply  
 14 being too full for that level of recharge that  
 15 was originally projected because the City has  
 16 cut back the use of its native rights since  
 17 1993?  
 18 **A. Can you state that question a different way?**  
 19 Q. Yeah, I'm -- I'm not sure how much of the  
 20 testimony you've seen in this case or how often  
 21 you were in attendance, I'm asking did you not  
 22 see any of the testimony or exhibits that showed  
 23 that the problem with the recharge and the  
 24 reason for the underachievement is the City  
 25 cutting back the use of its rights from and

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1 after 1993 so that there's not space left in the  
 2 aquifer to recharge?  
 3 **A. I attended the hearings where I think that the**  
 4 **City talked about that.**  
 5 Q. And did -- did you understand the information as  
 6 it was presented?  
 7 **A. I would say for the most part I did.**  
 8 Q. And -- and what -- for what reason do you  
 9 continue to think that that's not the  
 10 explanation for the City having underachieved  
 11 the original recharge projection?  
 12 **A. I stated in my question would be where did we**  
 13 **get the projection that -- we're basing this**  
 14 **decision off a model, is it the -- is it the**  
 15 **same projection that ASR II came off of?**  
 16 Q. So if the projection, Mr. Carmichael, didn't  
 17 account for the cutbacks that the City made  
 18 after 1993, wouldn't you expect the projection  
 19 to not be right when you got a decade or so out?  
 20 **A. I would expect it not to be right, that's**  
 21 **correct.**  
 22 Q. But -- but really as I understand your testimony  
 23 today, you're -- you're basically assuming an  
 24 attitude that since the City's projections for  
 25 ASR II was incorrect, you're not really willing

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1 to look at any of the information that the City  
 2 provides, or if you looked at it, you refuse to  
 3 believe it because the City's projection for  
 4 ASR II turned out not to be right. Is that what  
 5 you're saying?  
 6 **A. I would not agree with that statement at all;**  
 7 **I'm more than willing to look at any information**  
 8 **provided to me to change my opinion on it.**  
 9 Q. Well, I think you indicated during direct,  
 10 Mr. Carmichael, and you can correct this if I  
 11 misunderstood, but I thought you said that you  
 12 hadn't looked at the Burns & McDonnell  
 13 information on the saturated thickness projected  
 14 for your index cell after pumping down to the  
 15 1993 levels, and that if you looked at it, you  
 16 wouldn't be comfortable with it?  
 17 **A. That statement is based off of my opinion on the**  
 18 **projections.**  
 19 Q. And so what it does basically come down to is  
 20 you haven't looked, and if you did look, you  
 21 wouldn't believe it because the City was wrong  
 22 in a prior projection?  
 23 **A. Do you know if that information is available to**  
 24 **me today?**  
 25 Q. That was part of -- part of the reason for my

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1 question whether you had read the proposal  
 2 because that information was all in the exhibits  
 3 to the proposal, it's been on the DWR website in  
 4 the publicly available posted exhibits for the  
 5 proposal for probably over a year now. And  
 6 there is a graphic by which Burns & McDonnell  
 7 displayed the saturated thickness by index cell,  
 8 so it's fairly easy to find if you go through  
 9 the exhibits and look for that, and it actually  
 10 has been made an exhibit of record in the case  
 11 as well.  
 12 Also, Mr. Carmichael, in terms of the --  
 13 **MR. STUCKY:** Excuse me, I just had a  
 14 quick question, what -- what figure are we  
 15 talking about in the proposal that we're  
 16 referencing? We're trying to look for that  
 17 one.  
 18 **MR. MCLEOD:** Yeah, I'm not sure  
 19 sitting here today without breaking out of  
 20 the session to go online and look at the  
 21 electronic version of the proposal, but I  
 22 do know that it was one of the exhibits and  
 23 included the graphic that depicted  
 24 saturated thickness as well.  
 25 **MR. STUCKY:** Okay. I'll -- I'll



1 withdraw the question, if we can move on  
2 then; if Mr. McLeod doesn't know which  
3 exhibit he's referring to, then I'm  
4 guessing the witness doesn't know either.  
5 So thank you.  
6 **PRESIDING OFFICER:** Okay.  
7 Mr. McLeod, please proceed.  
8 **MR. MCLEOD:** Yes, I -- I remember it  
9 being the subject of quite a lot of  
10 questioning of witnesses presented early in  
11 the hearing, so the information is out  
12 there.  
13 **BY MR. MCLEOD:**  
14 Q. But let me turn also to the subject of chloride.  
15 Mr. Carmichael, have you looked at any of the  
16 studies on chloride movement?  
17 **A. I have.**  
18 Q. Have you looked specifically at the study on  
19 chloride movement from 2014 from which the map  
20 that Ms. Wendling was using had been drawn?  
21 **A. I have limited knowledge of the -- the wording**  
22 **of it.**  
23 Q. What -- what's your understanding of what the  
24 2014 study looked at and what its conclusions  
25 were?

1 **A. I think -- I think this map that I'm looking at**  
2 **here is showing how the chlorides have moved**  
3 **over a period of time or into the future period**  
4 **of time.**  
5 Q. Do you see on the map exhibit references to  
6 different scenarios such as double pumping and  
7 different colors of lines that represent those  
8 scenarios?  
9 **A. Can you repeat that question, I only got a**  
10 **little bit of it?**  
11 Q. When -- when you look down at the -- at the key  
12 or legend of the map that shows what the  
13 different colored lines mean, do you see  
14 references to different scenarios such as a  
15 double pumping scenario and an explanation of  
16 which colors of lines are illustrating each  
17 scenario?  
18 **A. I do.**  
19 Q. And do you recall what the chloride movement  
20 projections were for each of the modeled  
21 scenarios in terms of how fast the chloride  
22 movement might be accelerated at different  
23 levels in each of the modeled scenarios?  
24 **A. Can you help me confirm, is this -- is this map**  
25 **part of the model?**

1 Q. If we're looking at the same map,  
2 Mr. Carmichael, I believe the exhibit was drawn  
3 out of the USGS document that illustrated the  
4 study results.  
5 **A. Okay. Can you repeat your question too, please.**  
6 **Sorry.**  
7 **MR. MCLEOD:** Can we just have the  
8 reporter read back the question?  
9 (At this time, the reporter read  
10 the designated portion.)  
11 **A. I would say, yes, I recall that, I do believe**  
12 **that's what this figure 8 is about.**  
13 **BY MR. MCLEOD:**  
14 Q. So were there any of the modeled scenarios in  
15 particular that -- that gave you concerns for  
16 your property in terms of how much faster the  
17 chlorides might move in the event that that  
18 modeled scenario were implemented?  
19 **A. Yeah, that would be either -- is the -- is the**  
20 **top one purple or black? It would be number --**  
21 **number 1 and number 3.**  
22 Q. And do you recall what the acceleration of the  
23 chloride movement was in each of those  
24 scenarios?  
25 **A. Looks rather small but still an acceleration.**

1 Q. And, again, in your direct testimony,  
2 Mr. Carmichael, you indicated that some  
3 information had been presented in the hearing to  
4 give you assurances of what would happen if  
5 120,000 acre-feet were withdrawn, but, again,  
6 you were not satisfied with that information  
7 because of the 25 percent achievement of the  
8 projection the City had made for ASR II. Aren't  
9 you presenting --  
10 **A. That is correct.**  
11 Q. Aren't you presenting the City and its  
12 consultants with an unsatisfiable objection in  
13 that the City and its consultant can develop and  
14 present information, but your attitude is that  
15 you're not comfortable with it because the City  
16 has been wrong in a prior instance with a prior  
17 projection? How can the City ever develop --  
18 **A. I would say that that is not correct. I don't**  
19 **feel that the City has beared the burden of**  
20 **proof yet. I've messed up in my lifetime**  
21 **before, I've overcome it, I feel that the City**  
22 **could do the same. I just don't feel that**  
23 **they've put enough time into this study. I feel**  
24 **that -- I feel that a lot more things need to be**  
25 **done.**

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1 Q. And what the -- the specific reason that you've  
 2 given more than once in your testimony for  
 3 rejecting the information presented by the City  
 4 is simply that the City has only achieved  
 5 25 percent of the recharge that was projected  
 6 for ASR II; isn't that correct?  
 7 **A. That is correct.**  
 8 Q. Now, Mr. Carmichael, you indicated that among  
 9 your concerns you have a concern that maybe  
 10 landowners should get paid for the storage of  
 11 water under their property. You know that  
 12 that's not a feature of the existing ASR, don't  
 13 you?  
 14 **A. I do.**  
 15 Q. And what facet of the requested permit  
 16 modifications do you think should make that a  
 17 feature of the permit modifications given that  
 18 it was not a feature of the existing ASR permit?  
 19 **A. I guess where I'm going with that statement is**  
 20 **that I'm worried about what happens underneath**  
 21 **my property. If -- if the City is to fill the**  
 22 **aquifer up to full status and I want to dig a**  
 23 **pool in my back yard and I can't because the**  
 24 **water table is too high, I don't feel that**  
 25 **that's my problem because I didn't put that**

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1 **water in there to fill the aquifer up.**  
 2 Q. So, again, Mr. Carmichael -- let me ask first,  
 3 do you understand what the limitation is in the  
 4 existing permits as to how full the City can  
 5 fill the aquifer?  
 6 **A. I do.**  
 7 Q. And what is that limitation?  
 8 **A. I -- I believe it is 10 feet below the ground**  
 9 **level.**  
 10 Q. And, again, sir, that was established in the  
 11 existing ASR permits, correct?  
 12 **A. As far as I know.**  
 13 Q. And what -- what facet of the requested permit  
 14 modification should cause that to be revisited?  
 15 **A. It's in my opinion that if you're injecting**  
 16 **water into the ground, all facets of the project**  
 17 **need to be looked at.**  
 18 Q. Well, Mr. Carmichael, isn't the current  
 19 proposal -- let me rephrase it. What facet of  
 20 the current proposal do you think involves  
 21 increased injection into the aquifer?  
 22 **A. By drawdown in the basin storage area. I -- I**  
 23 **don't know if this map is the ASR basin storage**  
 24 **area; it's just in my opinion that the aquifer**  
 25 **could potentially be too full at times.**

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1 Q. Doesn't it strike you, Mr. Carmichael, that that  
 2 would be a reason in favor of the City's  
 3 proposal because the proposal allows the City to  
 4 take water to town and leave the aquifer  
 5 unaffected and still accumulate AMCs for that  
 6 combination of actions without trying to inject  
 7 additional water into a full aquifer?  
 8 **A. I think there are multiple ways that the City,**  
 9 **State, GMD could go about lowering an aquifer.**  
 10 Q. Is it your view that the aquifer should be  
 11 lowered?  
 12 **A. No.**  
 13 Q. Do you understand why the 10-foot limit on  
 14 filling the aquifer was arrived at in the  
 15 earlier stages of the ASR permit approval?  
 16 **A. I believe so.**  
 17 Q. Do you know if it was tied to the predevelopment  
 18 levels of the aquifer, that is the -- the levels  
 19 of water in the aquifer before people came to  
 20 the area and started pumping water out?  
 21 **A. I'm not sure that I am able to answer that**  
 22 **question because I don't know the answer.**  
 23 Q. Mr. Carmichael, you indicated also that one of  
 24 your concerns with the proposal is that you have  
 25 noted sinkholes in some sites along the river

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1 and you're concerned that drawdown and recharge  
 2 of the aquifer will create underflow and  
 3 sinkholes. Did I understand that correctly?  
 4 **A. That is correct.**  
 5 Q. And, again, Mr. Carmichael, to the extent that  
 6 the entire point of the City's proposal is to  
 7 not have to draw down and then recharge the  
 8 aquifer to create credits, wouldn't the concern  
 9 about underflow and sinkholes actually be a  
 10 point in favor of the City's proposal?  
 11 **A. Can you ask me that question in a different way?**  
 12 Q. I'm not sure that I can, Mr. Carmichael, but  
 13 I'll try. Let me back up. You understand that  
 14 the current ASR permits allow the City to draw  
 15 down the aquifer and to recharge it, don't you?  
 16 **A. That's correct.**  
 17 Q. And so under the existing permits, the City  
 18 already can do that conduct that you're worried  
 19 about creating underflows and sinkholes,  
 20 correct?  
 21 **A. That is correct.**  
 22 Q. Okay. Now, under the City's proposal where the  
 23 point of the proposal is that rather than having  
 24 to draw down the aquifer to create space to  
 25 recharge and then recharging it, the City's

1 proposing to take the water to town and skip the  
2 step of drawing down the aquifer and then  
3 refilling it so that underflow wouldn't be  
4 created and resulting sinkholes couldn't result.  
5 And I'm asking you, Mr. Carmichael, to the  
6 extent you've got that concern with underflow  
7 and sinkholes, wouldn't that actually seem to  
8 you logically to be a point in favor of the  
9 City's proposal?  
10 **A. I do not think that it should be, I don't -- I**  
11 **don't think that the City is -- I don't think**  
12 **the City has proved the -- the burden to me that**  
13 **it won't happen; and if you have AMCs, you have**  
14 **an extra 19,000 acre-feet of water that you can**  
15 **draw on top of your natural water right, I feel**  
16 **that that cone of depression could create a heck**  
17 **of a sinkhole. And if you go to start injecting**  
18 **water into that cone of depression, it's my**  
19 **opinion that you have to have some sort of**  
20 **ground movement there.**  
21 Q. Mr. Carmichael, do you understand that under the  
22 current permits as they stand, the City can  
23 attain that 19,000 acre-feet of credits by  
24 pumping the aquifer down with its native rights  
25 and then recharging the aquifer to accumulate

1 that there's going to be some delay in the  
2 investigation?  
3 **A. That is correct.**  
4 Q. Do you think that because of that the State  
5 should just cancel all existing water rights  
6 because it takes too long to adjudicate and --  
7 and come to remedies for an impairment?  
8 **A. I do not, but I do feel that DWR does a very**  
9 **good job issuing groundwater rights in our area**  
10 **and making sure that these impairments do not**  
11 **happen. I don't think that that has been done**  
12 **in this scenario.**  
13 Q. You understand that -- that the DWR does at  
14 times approve junior water rights, don't you,  
15 Mr. Carmichael?  
16 **A. I do.**  
17 Q. And that the premise of a junior water right is  
18 that there may not be enough water there to  
19 satisfy the junior right and senior rights,  
20 isn't that the case?  
21 **A. It is.**  
22 Q. And when the junior rights are approved by the  
23 State anyway, doesn't that come with the premise  
24 that if an impairment results, that junior right  
25 is going to have to be administered?

1 those credits?  
2 **A. I do.**  
3 Q. So how does the credits being an AMC versus  
4 physical recharge credit form change that --  
5 that analysis at all?  
6 **A. Well, it's my opinion that with your**  
7 **40,000 acre-feet of natural native water rights,**  
8 **your 19,000 acres of recharge credits, this --**  
9 **this type of pumping could go on for multiple**  
10 **years consecutively during a drought, and that**  
11 **is where -- that's where I'm worried about**  
12 **the -- the ground moving.**  
13 Q. And wouldn't that be the same, though, whether  
14 the credits are physical recharge credits that  
15 exist in -- in the permits now or whether  
16 they're AMCs that are in the proposal?  
17 **A. I would say it wouldn't matter which credit it**  
18 **is.**  
19 Q. Also in -- in your direct testimony,  
20 Ms. Wendling elicited from you a range of fears  
21 relating to the delays in DWR impairment  
22 investigations and implementation of remedy.  
23 And my -- my question for you there,  
24 Mr. Carmichael, isn't that the case in any  
25 impairment investigation with any water right,

1 **A. It is.**  
2 Q. And so it's -- it's a regular occurrence in the  
3 state process that -- that permits are approved  
4 with knowledge that there may be a future need  
5 to administer the junior right, correct?  
6 **A. I would say so, but I think that it's duly noted**  
7 **every time that -- that it's a possibility.**  
8 Q. You don't think that the State should refuse to  
9 approve all new water right applications because  
10 of the delay that there could be an impairment  
11 investigation, do you?  
12 **A. I don't.**  
13 Q. Mr. Carmichael, you -- you also noted that you  
14 would support permit conditions that would  
15 require the City's native rights to be used  
16 before credits, and I'm going to ask you as to  
17 that did you read the City's proposal to see if  
18 that was part of the proposal?  
19 **A. I'm fairly certain that my statement there was I**  
20 **had not seen any permit conditions stating that**  
21 **you had to use your native rights first or your**  
22 **credits first.**  
23 Q. Do you know whether the City proposed that it  
24 would use its native rights first?  
25 **A. I have -- I do not know.**

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1 Q. Mr. Carmichael, in terms of use or lose an  
 2 annual accounting, do any of your customers use  
 3 the flex plan mechanisms that are available  
 4 under the Kansas Water Rights Act?  
 5 **A. I'm not sure.**  
 6 Q. Do you know what flex plans are?  
 7 **A. I am vaguely aware of them.**  
 8 Q. Can you -- can you explain to us your  
 9 understanding of what they are and how they  
 10 work?  
 11 **A. I think it's either a three- or a five-year time**  
 12 **frame, and you can -- you can move some water**  
 13 **around to make -- to make it work, but at the**  
 14 **same time you lose a certain part of your water**  
 15 **right when you do that.**  
 16 **MR. MCLEOD:** I don't have further  
 17 questions for the witness.  
 18 **PRESIDING OFFICER:** Okay.  
 19 Ms. Murray, does DWR have any questions?  
 20 **MS. MURRAY:** I do not, no.  
 21 **PRESIDING OFFICER:** Okay.  
 22 Mr. Stucky, how about GMD?  
 23 **MR. STUCKY:** Thank you. Just --  
 24 just a few questions.  
 25 //

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1 **CROSS-EXAMINATION**  
 2 **BY MR. STUCKY:**  
 3 Q. Mr. Carmichael, can you hear me?  
 4 **A. Yes, sir.**  
 5 Q. All right. I just had a few follow-up questions  
 6 to clarify my understanding of -- regarding some  
 7 questions you were just asked. So a moment ago  
 8 you were asked some questions both by Mr. McLeod  
 9 and Ms. Wendling regarding irrigation systems  
 10 and the cost of various irrigation systems and  
 11 things of that nature. Do you recall those  
 12 questions?  
 13 **A. I do.**  
 14 Q. And one question that was asked is, you know,  
 15 what adaptations you've made to the systems  
 16 based on salinity in the water, and I think one  
 17 thing you said was -- was there was PVC pipe  
 18 lining that was now put in the systems and some  
 19 enhancements, I believe, to the motors, things  
 20 of that nature. Is that what you said in your  
 21 testimony?  
 22 **A. It was.**  
 23 Q. And let me just ask you this, I'm not sure this  
 24 was answered, but what is the additional cost of  
 25 adding this equipment to the irrigation systems?

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1 And I know that every irrigation system is  
 2 different, but -- but in general, what's the  
 3 added cost of trying to add these protections to  
 4 guard against salinity?  
 5 **A. I would say a range of 30 to 60,000 based on**  
 6 **length of the machine.**  
 7 Q. And let me also ask you this: So you testified  
 8 about certain areas of the aquifer where there's  
 9 salinity and certain areas of the aquifer where  
 10 there's not as much salinity just based on your  
 11 general awareness; is that correct?  
 12 **A. It is.**  
 13 Q. Let me clarify, if there was an area in the  
 14 aquifer where there was not as much salinity  
 15 and, in fact, the risk was very low that there  
 16 would be salinity in the water, if the added  
 17 cost to guard against this chloride is 30 to  
 18 \$60,000, would you be able, then, to sell a  
 19 cheaper irrigation system in an area where  
 20 there's less salinity?  
 21 **A. Yes.**  
 22 Q. So in other words, if you're in a part of the  
 23 aquifer where the chloride movement has not  
 24 affected yet, the cost could be 30 to \$60,000  
 25 less for the irrigator in that area?

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1 **A. That is correct.**  
 2 Q. So, alternatively, if we're in a area of the  
 3 aquifer where the salinity is much greater, it's  
 4 costing on average for each irrigation system,  
 5 it's costing the irrigator 30 to \$60,000 more to  
 6 guard against that?  
 7 **A. That is correct.**  
 8 Q. I want you to go back to Exhibit 68, the very  
 9 last page and the map that you were asked about  
 10 by both Ms. Wendling and Mr. McLeod.  
 11 **A. I'm there.**  
 12 Q. As you can see on -- on this map, there's --  
 13 there's some different wells that are noted,  
 14 there's IW36C to the south on this map toward  
 15 the very bottom. IW360, do you see that well?  
 16 **A. Yes, sir.**  
 17 Q. I'm sorry, it's C, 36C, my -- it's so small,  
 18 my -- my eyesight was not as good there.  
 19 Changing it to 36C, you still see that at the  
 20 very bottom?  
 21 **A. I do.**  
 22 Q. Okay. And then just above that, it appears, is  
 23 IW32C, if I'm reading that correctly. Do you  
 24 see that one just north?  
 25 **A. I do.**

1 Q. And on this map, it looks like if we were to  
2 analyze the legend at the bottom, it appears to  
3 me that those two wells are about two miles  
4 apart; is that right?  
5 **A. I would agree with that.**  
6 Q. And just so I understood your testimony, is your  
7 well pretty much smack dab in between, your  
8 domestic well, is it pretty much smack dab in  
9 between those two wells I just identified?  
10 **A. Yes.**  
11 Q. So in other words, just so in a general sense  
12 the testimony is clear, right now, you're just  
13 on the cusp of being affected by the chloride  
14 movement; is that right?  
15 **A. Unfortunately you are correct.**  
16 Q. But to further clarify, unlike Mr. Basore, who  
17 had wells that were already being impacted by  
18 the chloride movement, you aren't quite affected  
19 at this juncture, correct?  
20 **A. I am not.**  
21 Q. However, what we see, and I'm not going to ask  
22 you in any kind of technical sense, these  
23 questions were all asked and answered by experts  
24 previously, but as you can see from this  
25 particular map, it -- it indicates in the

1 other water users; is that right?  
2 **A. That is correct.**  
3 Q. So let me clarify this, you indicated that your  
4 domestic well adds value to your property; is  
5 that right?  
6 **A. Yes.**  
7 Q. And, in fact, your domestic -- your domestic  
8 well supplies water to your house and things of  
9 that nature you testified to, right?  
10 **A. That's correct.**  
11 Q. Do you have any knowledge of the impact losing  
12 that domestic well and that water to your house,  
13 do you have any knowledge of the impact that  
14 would cause to the value of your property?  
15 **A. I do but I'm not going to state that I know**  
16 **fully.**  
17 Q. Well, Mr. Carmichael, I'm not asking you to  
18 state fully, I'm asking you to state in a  
19 general sense if you have knowledge as to a  
20 general -- generally, how that would decrease  
21 your property value?  
22 **A. I do.**  
23 Q. Please testify in that nature.  
24 **A. I think that if my domestic well were to become**  
25 **unusable, with no rural water, my house would**

1 explanation at the bottom a number of different  
2 pumping scenarios; is that right?  
3 **A. That is correct.**  
4 Q. And if I were just to proffer to you that one of  
5 the pumping scenarios as shown by the blue line  
6 is double Wichita municipal pumping and no  
7 irrigation pumping, would you agree that that is  
8 what the map appears to explain?  
9 **A. I would agree.**  
10 Q. And would you also agree that if we look at  
11 where that light blue line then would be, where  
12 the chloride movement would be based on that  
13 pumping scenario, would you then agree that you  
14 would be impacted by the chloride movement at  
15 that point?  
16 **A. I would agree with that.**  
17 Q. And, in fact, you know, we see a lot of dots on  
18 this map, would you agree that other wells would  
19 also then be impacted by that pumping scenario?  
20 **A. I would agree.**  
21 Q. And so in other words, even though the chloride  
22 movement may not be impacting you now, if one of  
23 these alternative pumping scenarios occurred  
24 that was modeled in this map, if that occurred,  
25 it could impact you, and it could impact some

1 **only be worth the value of the land that it sits**  
2 **on.**  
3 Q. And what -- do you have any idea of what that  
4 financial difference would be for you?  
5 **A. For me personally, it would be substantial.**  
6 Q. Okay. And substantial as in thousands of  
7 dollars, tens of thousands of dollars, what --  
8 what are we talking, what do you mean by  
9 substantial?  
10 **A. Hundreds of thousands of dollars.**  
11 Q. Okay. And have you -- there's a bunch of  
12 questions asked about essentially taking water  
13 from underneath your land and the impacts  
14 that -- that could have, if that's what the City  
15 proposal indeed did. Do you recall some of  
16 those questions?  
17 **A. I do.**  
18 Q. Just to clarify the record, have you given the  
19 City of Wichita permission to withdraw aquifer  
20 maintenance credits from underneath your land?  
21 **A. I have not.**  
22 Q. Are you so giving the City of Wichita permission  
23 to do so?  
24 **A. Not at this time.**  
25 Q. And so I think this question is already clear,

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1 as far as your expectation to the value of your  
 2 land and the fact that it has this water right,  
 3 you have that expectation, don't you?  
 4 **A. I do.**  
 5 Q. Just a moment ago you were asked some questions  
 6 about whether there was any difference between  
 7 the ASR physical recharge approach and the  
 8 aquifer maintenance credit recharge approach.  
 9 Do you recall those questions?  
 10 **A. I do.**  
 11 Q. And you were asked if -- if there were any  
 12 distinct differences between the two. Do you  
 13 recall some of those questions?  
 14 **A. That's correct.**  
 15 Q. And I believe that you sat in this hearing and  
 16 testified that you've been in this hearing a  
 17 good chunk of the time, correct?  
 18 **A. That's correct.**  
 19 Q. And you also testified that you've at least read  
 20 portions of the City's proposal and have a  
 21 general knowledge of the City's proposal; is  
 22 that correct?  
 23 **A. It is correct.**  
 24 Q. So as you were asked to try and differentiate  
 25 between the two, let me ask you this: With

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1 respect to the physical recharge credits, is  
 2 there water injected into the aquifer?  
 3 **A. There is.**  
 4 Q. Let me ask you this: With respect to aquifer  
 5 maintenance credits and under the City's new  
 6 proposal, are they actually injecting water into  
 7 the aquifer?  
 8 **A. They are not.**  
 9 Q. And are you aware of the extent to which the  
 10 city has been able to successfully accumulate  
 11 physical recharge credits in the past?  
 12 **A. I am.**  
 13 Q. Tell me what your knowledge is in that regard.  
 14 **A. Based off of their initial projection, they have**  
 15 **only been able to do approximately 25 percent of**  
 16 **that projection.**  
 17 Q. Do you have a fear, based on the testimony you  
 18 listened to, that if the City were to be able to  
 19 accumulate aquifer maintenance credits, where  
 20 they accumulate this credit to take water back  
 21 out of the ground by just pumping straight to  
 22 the City of Wichita, do you have the fear that  
 23 if they're able to do that, they'll be able to  
 24 accumulate far more credits than they are  
 25 currently accumulating?

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1 **A. I do.**  
 2 Q. And if they're able to accumulate far more  
 3 credits by just merely pumping water straight to  
 4 the City of Wichita and then later have this  
 5 right to take water out of the aquifer, would  
 6 that be detrimental to you?  
 7 **A. Not only me but my neighbors and the Equus Beds.**  
 8 Q. So in other words, as we -- and there's a lot of  
 9 other distinctions I could make, but just in a  
 10 general sense, as we try and distinguish between  
 11 the physical recharge credits and the aquifer  
 12 maintenance credit proposal, is it your belief  
 13 that the aquifer maintenance credit proposal  
 14 will be more detrimental to you and neighboring  
 15 water right holders?  
 16 **A. I believe so.**  
 17 Q. You were asked some questions about a reverse  
 18 osmosis system and whether or not it's possible  
 19 or theoretical to put that system in the pumping  
 20 equipment that you sell or that you service. Do  
 21 you recall some of those questions?  
 22 **A. I think Mr. McLeod was wanting me to install**  
 23 **that in my house.**  
 24 Q. Okay. Well, let me back up, you also sell  
 25 irrigation equipment and you talked about motors

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1 and irrigation equipment and things of that  
 2 nature; is that right?  
 3 **A. That's correct.**  
 4 Q. So if the question was only asked with respect  
 5 to your house, do you have knowledge about that  
 6 with respect to the irrigation equipment that  
 7 you -- you sell?  
 8 **A. I do.**  
 9 Q. Tell me your knowledge in that regard.  
 10 **A. We've been trying to come up with a solution to**  
 11 **be able to pump saltwater. There's -- there is**  
 12 **some things on the market, they're terribly**  
 13 **expensive. There's no proof that they work yet.**  
 14 **Like I said, they're brand new. I'm not**  
 15 **familiar with reverse osmosis. I'm guessing**  
 16 **that it would work really good on a**  
 17 **20-gallon-a-minute well; I'm guessing it**  
 18 **probably wouldn't work so good on**  
 19 **1,000-gallon-a-minute well.**  
 20 Q. Do you have any general sense of -- of whether  
 21 or not there would be a significant added cost  
 22 if we were to include this reverse osmosis  
 23 system?  
 24 **A. My guess would be that cost would be very**  
 25 **significant.**

1 Q. And what does very significant mean to you, is  
2 that thousands of dollars, what are we -- what  
3 are we talking here?  
4 **A. I would say tens of thousands.**  
5 Q. So you testified that the impact on irrigators  
6 of the salinity already based on current  
7 protections is 30 to 60,000, so we're talking in  
8 addition to that current expense if we were to  
9 add this reverse osmosis, that would be an  
10 additional tens of thousands of dollars added-on  
11 cost for these irrigators?  
12 **A. That is correct.**  
13 Q. Now, you were asked a number of questions about  
14 reverse osmosis, and I understand that you  
15 actually have boots on the ground in the sense  
16 that you work on these motors and you sell these  
17 irrigation systems as part of your job, and so  
18 in that sense, you're extremely knowledgeable  
19 about that, but let me ask you this: As you sat  
20 in this hearing, listened to the City of  
21 Wichita's experts testify and also read the City  
22 of Wichita's proposal, did you hear any  
23 testimony or see anything in the proposal about  
24 these reverse osmosis systems and using that as  
25 a protection for irrigators?

1 **A. I did not.**  
2 Q. So, in fact, the City of Wichita, although they  
3 asked you questions about this, they didn't  
4 testify as to the viability of these reverse  
5 osmosis systems, did they?  
6 **A. They did not.**  
7 Q. And, in fact, it's not listed in their proposal,  
8 is it?  
9 **A. Not to my knowledge.**  
10 Q. Would that be additional assurances or testimony  
11 that you would like to hear from the City of  
12 Wichita in the future?  
13 **A. Yes.**  
14 Q. And, indeed, do you believe that to the extent  
15 the City of Wichita's AMC credit proposal adds  
16 additional cost to irrigators in the form of a  
17 reverse osmosis system and in the form of lining  
18 the pipes and enhancing the motors, do you  
19 believe that's a cost that the City of Wichita  
20 should bear?  
21 **A. I do.**  
22 **MR. STUCKY:** I don't have further  
23 questions.  
24 **PRESIDING OFFICER:** Thank you.  
25 Ms. Wendling.

1 **REDIRECT EXAMINATION**  
2 **BY MS. WENDLING:**  
3 Q. Mr. McLeod asked you some questions about junior  
4 water rights being approved subject to possible  
5 future -- I can't think of the word right now.  
6 **A. Permits?**  
7 Q. Adjudication essentially. Do you recall that  
8 testimony?  
9 **A. I do.**  
10 Q. Are you also familiar with permits in the basin  
11 storage area being denied?  
12 **A. I am.**  
13 Q. And do you recall the reasons for those denials?  
14 **A. I would say a rather large percentage of them**  
15 **were denied due to applying in an**  
16 **over-appropriated area.**  
17 Q. And do you recall whether safe yield was a  
18 factor in whether those permits would be denied?  
19 **A. It was.**  
20 Q. And do you know whether or not the AMC or  
21 physical recharge credit withdrawal was then  
22 subject to a safe yield analysis?  
23 **A. I do not think that it has.**  
24 Q. Mr. McLeod also asked you if you knew whether  
25 the City would be required to use their native

1 water rights first or something along those  
2 lines. Do you recall that questioning?  
3 **A. I do.**  
4 Q. Can I have you turn to City's Exhibit 1, which  
5 is the proposal, located in that black binder,  
6 it should be at the front? And I'll have you  
7 start at page 3-5.  
8 **A. What -- what tab was it?**  
9 Q. It should be tab number 1. It's this. I think  
10 there's a cover letter in there that's not in  
11 mine but ...  
12 **A. Page 3-5.**  
13 Q. And do you see a heading 3.4?  
14 **A. I do.**  
15 Q. And what is that heading?  
16 **A. Proposed -- Proposed AMC Permit Conditions.**  
17 Q. Now, if you'll take a minute to review the seven  
18 permit conditions listed on page 3-6. Let me  
19 know if you see a permit condition requiring  
20 native credits to be used first?  
21 **A. I do not.**  
22 Q. Mr. McLeod also addressed your concerns  
23 regarding sinkholes by discussing that AMCs  
24 would not require injecting water into the  
25 aquifer. Can you, on page 3-5, read the

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1 second-to-last sentence for me?  
 2 **A. The City will continue to maintain an ASR**  
 3 **operational priority focused on development of**  
 4 **physical recharge credits when and where**  
 5 **groundwater levels are at elevations that**  
 6 **facilitate physical recharge capacity.**  
 7 Q. So the -- does the continued physical recharge  
 8 in conjunction with the additional AMC option  
 9 give you concerns about potential sinkholes?  
 10 **A. Most definitely.**  
 11 **MS. WENDLING:** No further questions.  
 12 **PRESIDING OFFICER:** Mr. McLeod?  
 13 Mr. McLeod, do you have any further  
 14 questions for this witness?  
 15 **MR. MCLEOD:** I don't.  
 16 **PRESIDING OFFICER:** Thank you. Any  
 17 questions from DWR? Any questions from  
 18 DWR?  
 19 **MS. MURRAY:** I don't have any more  
 20 questions, no.  
 21 **PRESIDING OFFICER:** Thank you. Any  
 22 more questions from the GMD, Mr. Stucky?  
 23 **MR. STUCKY:** No, Your Honor.  
 24 **PRESIDING OFFICER:** Okay. That  
 25 being the case, thank you, Mr. Carmichael,

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1 you're excused.  
 2 **A. Thank you.**  
 3 **PRESIDING OFFICER:** And this may be  
 4 a good time for a short break since we're  
 5 between witnesses so let's take about ten  
 6 minutes. We're going off the record right  
 7 now.  
 8 (Thereupon, a recess was taken;  
 9 whereupon, the following was had.)  
 10 **PRESIDING OFFICER:** We are back on  
 11 the record. We are ready for the next  
 12 witness on behalf of the Intervenor.  
 13 Ms. Wendling.  
 14 **MS. WENDLING:** We have Bill Carp.  
 15  
 16 BILL CARP,  
 17 having been first duly sworn, was  
 18 examined and testified as follows:  
 19  
 20 **DIRECT EXAMINATION**  
 21 **BY MS. WENDLING:**  
 22 Q. All right. Mr. Carp, will you state your name  
 23 for the record, please.  
 24 **A. Bill Carp.**  
 25 Q. And can you tell us your occupation?

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1 **A. Crop producer, corn, soybeans, wheat, irrigated,**  
 2 **probably half of what we do.**  
 3 Q. And how long have you been doing that?  
 4 **A. I'm getting old, 40 years.**  
 5 Q. All right. Can you tell us a little bit about  
 6 your experience with water rights?  
 7 **A. My experience with water rights is whatever I**  
 8 **need to know in order to be in compliance with**  
 9 **the wells that I have permits on or my**  
 10 **landlord's wells that I report on and be sure**  
 11 **that we're always in compliance. I have**  
 12 **developed a couple of wells, which I needed to**  
 13 **know that process in order to obtain a temporary**  
 14 **permit or your appropriation and then to, you**  
 15 **know, to get a full water right.**  
 16 Q. And in what way do you rely on the Equus Beds?  
 17 **A. I have one, two, three -- I have four permitted**  
 18 **wells that I'm an owner on the property, and I**  
 19 **have one leased well that I rely on for**  
 20 **irrigation. And I have one rental property that**  
 21 **has a home and has a domestic well for that**  
 22 **purpose.**  
 23 Q. And of those, are they all in the basin storage  
 24 area or --  
 25 **A. No. One -- I believe only one is in the basin**

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1 **storage area; the others are just, like, one or**  
 2 **two miles south of the area.**  
 3 Q. Will you refer to the first tab in the  
 4 Intervenor's binder and find the map dated  
 5 page 2 that has your name on it?  
 6 **A. Yes.**  
 7 Q. Does this appear to be an accurate reflection of  
 8 your water permit in the basin storage area?  
 9 **A. Yes.**  
 10 Q. And which index cell do you believe that's  
 11 located?  
 12 **A. 31.**  
 13 **MS. WENDLING:** I would like to  
 14 move -- I would like to admit Intervenor's  
 15 Exhibit 1, which is the map of the three  
 16 witnesses' water permits.  
 17 **PRESIDING OFFICER:** Any objection?  
 18 Okay. Hearing none, Intervenor's Exhibit 1  
 19 will be admitted.  
 20 **BY MS. WENDLING:**  
 21 Q. For your -- the well -- the permit in the basin  
 22 storage area, do you have a backup plan if the  
 23 Equus Beds becomes contaminated or unavailable?  
 24 **A. No, I wouldn't say that I have a backup plan.**  
 25 Q. Have you studied irrigation conservation or



1 water rights?  
2 **A. Not what you call study. You say or water**  
3 **rights, did you ask that at the end? I -- I try**  
4 **to be knowledgeable enough that I can perform**  
5 **what I need to do inside of my business and**  
6 **dealing with the different agencies to be in**  
7 **compliance and what water -- you know, how much**  
8 **water we can use and when and where. I mean,**  
9 **even stuff such as water meters, there's 8-inch**  
10 **pipe, there's 8 -- 8-and-1/8th-inch pipe,**  
11 **there's 10, 10 and 5/16ths. I mean, I've**  
12 **learned that you can't just grab one 8-inch**  
13 **water meter and throw in another pipe 'cause it**  
14 **may be 1/8th inch off, and we have a different**  
15 **gage pipe. And so do I study it? I don't sit**  
16 **down and read the book, but we seem to come**  
17 **across a lot of stuff every day that it seems**  
18 **like we're studying it all the time.**  
19 **You asked about, what was your -- the other**  
20 **things that you asked about besides the water**  
21 **rights?**  
22 **Q. Irrigation or water conservation.**  
23 **A. Yeah, the conservation, to the extent that, you**  
24 **know, what can I do that's the most, what do you**  
25 **call it, return on my investment. I look at a**

1 lot of it from my capital income, expense  
2 standpoint. Do I look at it from the standpoint  
3 of a -- you know, just how much water can I  
4 absolutely save the world, I'm probably not that  
5 person.  
6 **Q. Have you made efforts to conserve water or**  
7 **contribute to a fuller aquifer?**  
8 **A. I have. Probably the biggest expense we did is**  
9 **we had an extra -- oh, just under 80 acres that**  
10 **was flood irrigated when I leased it from my**  
11 **landlord, and at my own expense -- well, I did**  
12 **explore using some of what they call WHIP money**  
13 **or some supplemental subsidies from the**  
14 **government. And, I don't know, it looked a**  
15 **little slow and, you know, lots of bookkeeping**  
16 **and finally was just like, you know, this isn't**  
17 **ever going to happen. So I bought -- I bought a**  
18 **pivot and turned 80 acres of flood irrigation**  
19 **into sprinkler. And that -- that's big**  
20 **conservation and it's big money so we -- and we**  
21 **did that.**  
22 **And then I would say all but one -- most of**  
23 **our systems have the latest -- I say the latest,**  
24 **we use the long drops to get down away from the**  
25 **evaporation and the newer type nozzles and**

1 **stuff. I mean, we've got one system, the system**  
2 **that's in index 31, of course, it's a salt --**  
3 **that's an area that already has some salt, that**  
4 **has a lined pivot that Mr. Carmichael was**  
5 **talking about, and the drops on that pivot,**  
6 **they're clean down to my knee and just kind of**  
7 **have a -- I don't know what Josh would call**  
8 **them, but they're a spray nozzle that's -- you**  
9 **know, you go out there and look at it, you're**  
10 **like, is that watering that, but it does. And**  
11 **that's expensive 'cause it's twice as many**  
12 **drops, if not three times as many. Yeah, we**  
13 **spend money for conservation.**  
14 **Q. And is there a future credit for the water that**  
15 **you're saving with your conservation efforts?**  
16 **A. No.**  
17 **Q. Can you tell us about the -- I think you call it**  
18 **developing a water right, but what was the**  
19 **process you went through to obtain a water**  
20 **right?**  
21 **A. Well, first thing I did is I went to District 2,**  
22 **and I asked them in my -- I think they do a**  
23 **two-mile circle, but here's my point where I**  
24 **would like my well. And I believe they do a**  
25 **two-mile circle of safe yield, meaning they go**

1 **to look and see if -- if there's already so many**  
2 **wells in that area that it's appropriated fully**  
3 **or not fully appropriated, okay, there's --**  
4 **there's 80 acre-feet left or there's**  
5 **500 acre-feet left, how much do you want?**  
6 **Well, I'm doing -- I guess under a regular**  
7 **quarter mile circle, there'd be 130 acres, and**  
8 **what do they give us, 1. -- or what's available,**  
9 **like 1.3 for that purpose. So, what,**  
10 **180 acre-feet, 100 -- whatever it comes out to,**  
11 **170 acre-feet under a standard quarter mile**  
12 **system, I would request that, and District 2**  
13 **would say, okay, well, we're going to -- if**  
14 **we -- if we're going to move forward with this,**  
15 **I pay a -- I pay a -- not a fine but, you know,**  
16 **you pay -- you pay to move it forward.**  
17 **And then they, District 2, as I understood**  
18 **it, the water district, they help me fill out**  
19 **all the paperwork and -- or, you know, assist**  
20 **you, and you fill out your paperwork and where**  
21 **it's at; and then it goes to DWR, and DWR looks**  
22 **it over. And everyone decides safe yield, do we**  
23 **have safe yield or not, is the area**  
24 **over-appropriated, is my understanding. If it's**  
25 **not -- and I think they even send out a notice**

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1 to wells that are close in the area of  
 2 landowners, irrigation wells or domestic wells,  
 3 I guess. Domestic wells get an opportunity to  
 4 say, no, this is going to affect me or not, and  
 5 then you have the opportunity to go to them and  
 6 say, I don't think it will or, you know,  
 7 whatever.  
 8 If you go through that whole process, then  
 9 you are issued a -- what is it, I can't remember  
 10 what the first one is when it's not a true water  
 11 right. But a right to appropriate, I guess,  
 12 something like that. And then you begin your --  
 13 you get your system up, you drill your well, you  
 14 can't -- let's see, there's -- there's some  
 15 order in there.  
 16 And you only have a certain amount of time  
 17 to drill that well, I mean, you've got to do it  
 18 within a certain period and pump that well  
 19 within a certain period. You can't just go get  
 20 this water appropriation and then walk off and  
 21 leave it.  
 22 So then you got to get the water -- you  
 23 have to get the water going and get it  
 24 happening, get a system on it, and from that  
 25 point, then, you have to report all your usage,

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1 and you have a five-year period to perfect that.  
 2 And you can perfect it -- you -- if you use,  
 3 say -- let's say it's 170 acre-foot, if you use  
 4 up to that 170 acre-feet at some point in that  
 5 first five years, then you have fully perfected  
 6 it and you go for the full water permit. There  
 7 is a five-year extended permit if, say, it  
 8 doesn't -- it rains quite a bit through the  
 9 first five years or you don't grow crops that  
 10 need that water and you don't reach your -- your  
 11 fullest perfection, you have another five years  
 12 to pull the -- the greatest pumping year you  
 13 have, not in excess of your appropriation, that  
 14 becomes your water right.  
 15 Q. You mentioned that there's a standard of a 1.3  
 16 when you're determining the quantity?  
 17 A. I think irrigation in Sedgwick County, it's  
 18 1.3 acre-feet of water per acre to be watered.  
 19 Q. So you don't get to decide this is the amount of  
 20 water I want, it's a formula laid out for you?  
 21 A. That would be the maximum.  
 22 Q. And if you thought you needed more water than  
 23 that, you don't have an option to --  
 24 A. No, not as irrigation.  
 25 Q. And do you know if that 1.3 irrigation number is

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1 based on average precipitation or water needed  
 2 during a drought?  
 3 A. I -- I think it's -- it's not during a drought.  
 4 I think it's aggregate water. I believe --  
 5 well, I don't know who came up with that,  
 6 whether it's K-State or what. I mean, I think  
 7 it's average water expected to need to grow a  
 8 crop in south central Kansas on most years.  
 9 It -- it's not a drought -- it's not a drought  
 10 number.  
 11 Q. And say you wanted to change your use to put a  
 12 fountain in your field, do you know if you'd be  
 13 able to do that?  
 14 A. I don't know. You might but -- I -- I think  
 15 you -- I don't know. I -- I assume you can do  
 16 some changes of use; I don't know to what  
 17 extent. I do know there's -- you know, I -- I'm  
 18 in an area where there's a lot of sandpits,  
 19 dredged sandpits and they have to have  
 20 evaporative water rights. I be -- I'm assuming  
 21 that if I wanted to do a sandpit I could, you  
 22 know, take my water right and ask for a change  
 23 of -- change of use on that same area. I  
 24 believe -- I believe that could be done.  
 25 Q. Do you have -- what happens to your annual

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1 appropriation if you don't use it?  
 2 A. It's -- it's -- it's a per annum deal. You  
 3 know, if I've got 170 acre-foot water right and  
 4 I've used 110 feet of it, there's 80 acre-feet  
 5 I -- that's never -- that's not my water  
 6 anymore, it's gone.  
 7 Q. Would you be able to store that water?  
 8 A. No.  
 9 Q. And you mentioned some annual reporting, I  
 10 believe. What --  
 11 A. Yes.  
 12 Q. -- is necessary to maintain your water right?  
 13 A. Well, everything's metered and we report at the  
 14 end of -- it is -- it's a January 1 to a  
 15 January 1 deal. Of course, we have a season; we  
 16 don't tend to water in the middle of the winter  
 17 here in Kansas, thankfully. Or I say Kansas,  
 18 south central Kansas. I think out west they do.  
 19 But in this part of the world, you know, we  
 20 don't generally have to start a pivot up in  
 21 January, but it's -- you're per annum, you read  
 22 your meter every year, you report what your  
 23 meter reading is. And -- and on that report  
 24 you're expected to do the addition and  
 25 subtraction and -- and bring down. You know,

1 I -- I report my meter reading, but then I'm  
2 supposed to do the calculations and report this  
3 is the minimum acre-feet per gallons that I --  
4 that I pump from this permit. And what more --  
5 what was the question completely again?  
6 Q. What is needed to maintain your water right?  
7 A. Okay. So you've got to report that. You can't  
8 go over your -- your level. There's a penalty  
9 deal -- oh, I wished I'd of had that in my head,  
10 I should have looked that up this morning.  
11 It's -- it's substantial, it seemed to me like  
12 if -- I had it figured out one time if you made  
13 even, like, one -- one extra circle, one extra  
14 pass, which I think in most cases is -- we  
15 figure that's, what, like, 11 acre-feet on a  
16 quarter section of a three-quarter-inch pass, I  
17 think that's like a \$10,000 fine. It -- it --  
18 it's like 5, 6, 7, \$800 a day. It's more than  
19 that, it gets more than that. I forgot what it  
20 is, but it's substantial. In my world, it's  
21 substantial. It -- it runs into thousands of  
22 dollars if you run over three or four or five  
23 days. And so there's an incentive.  
24 And -- and then the first year it's that,  
25 and the second year, it's that plus you lose a

1 percentage of your water right, I believe. And  
2 if you do it a third year, you lose your water  
3 right for a number of years. I -- I don't  
4 remember the exacts of it, but it's -- it's in  
5 that form. So it's expensive, and eventually  
6 you would lose your water right if you are  
7 overpumping consistently. Or I say  
8 consistently, I think three years, it could be  
9 this year and 20 years from now, as far as I  
10 know, if you're into the third year, you're  
11 pulled.  
12 Also there's abandonment, that if you don't  
13 use your water, there's abandonment rules and  
14 you can lose it -- lose off of that too. I  
15 don't under -- I don't know what all the  
16 technicals are of it, but I do know it exists.  
17 Q. And have you attempted to get additional water  
18 rights?  
19 A. When you say additional, like a new permit or  
20 adding to an old permit?  
21 Q. Either one?  
22 A. I've gotten new permits or extension for new  
23 permits. I've asked -- and I did -- I think I  
24 believe I asked one time for extra acres on a  
25 well I knew that would supply some extra acres

1 with a longer pivot and I had the room to do it,  
2 and I asked about getting increased -- I don't  
3 even think I asked for increased acre-foot, I  
4 think I just asked for the permission to water  
5 on extra acres. I wasn't talking about any more  
6 water, I was just asking for the permission to  
7 water more acres because we had conserved and we  
8 had done things that gave us extra water out of  
9 our water permit, and I was not -- I was told  
10 that would not be allowed either.  
11 Q. And do you recall who told you that?  
12 A. Pardon?  
13 Q. Do you recall who said that it would not be  
14 allowed?  
15 A. It would have been District 2.  
16 Q. And have you been told additional water is not  
17 available in the basin storage area?  
18 A. Yes.  
19 Q. On what grounds?  
20 A. On what grounds?  
21 Q. (Nods head.)  
22 A. Over-appropriated.  
23 Q. Do you understand that to be a common issue  
24 faced by many within the basin storage area?  
25 A. Well, it just kind of become common knowledge to

1 some extent. I did ask for that one, it would  
2 have been on a piece of land just south of  
3 Bentley, the town of Bentley, I was requesting,  
4 I say, for my landlady, and I was told that that  
5 area was over-appropriated. Going into it, I  
6 kind of knew that, I mean, but -- but I thought,  
7 hey, you don't ask, you don't know, and I ...  
8 Oh, and, yes, the -- the well that I have  
9 listed as the one in index 31, I do own the  
10 quarter section to the south of that, and when  
11 we purchased that property or we were looking at  
12 purchasing that property, I asked if it was  
13 possible there was water available to the south  
14 so that I could water the south quarter section  
15 of this half section; and that was prior to my  
16 ownership, that was a quick question to  
17 District 2. And their quick answer was, I can  
18 tell you that -- I can tell you verbally --  
19 verbally because somebody has already asked  
20 about it due to the fact that that property was  
21 for sale.  
22 So I believe Mr. Boese said to me, he says,  
23 well, if you want to spend the money, I can do  
24 an official, but I can tell you the answer is  
25 it's not there 'cause I already looked at it for

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1 someone else. And I took the verbal as my  
 2 answer; I didn't think, well, I needed to go  
 3 hire Burns & Mac to find out if there's enough  
 4 water there that I could really do this, that  
 5 they had done it wrong so ...  
 6 Q. So the conservation efforts that you've invested  
 7 in resulting in water savings, to be told that  
 8 you cannot use that on additional acreage, were  
 9 you given a reason?  
 10 A. I guess I -- I guess I assumed that's just kind  
 11 of how water authority is written.  
 12 Q. But did the water right --  
 13 A. I was not give a reason.  
 14 Q. -- it's not a new appropriation?  
 15 A. No, I don't know that I was given a reason, and  
 16 I don't recall whether I asked or not. I mean,  
 17 it's been --  
 18 Q. Do you --  
 19 A. -- it's been awhile, and I don't remember  
 20 exactly the whole details of it other than, no,  
 21 that probably wouldn't be -- you probably  
 22 wouldn't be allowed to that.  
 23 Q. Does that de-incentivize --  
 24 A. Pardon?  
 25 Q. Does that make you less likely to invest in

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1 further --  
 2 A. Conservation?  
 3 Q. Uh-huh.  
 4 A. Well, like I said, any conservation we do, we do  
 5 it based on return on investment. If I can  
 6 spend \$1,000 on conservation and I can gain my  
 7 \$1,000 back over time, I mean, quick enough  
 8 time, you know, whatever you want, 15 or  
 9 20 percent return on your money or 10 or 5, or  
 10 for a farmer, we try to get 1 percent, but I  
 11 base my conservation decisions basically on  
 12 that. But I do have at least one, especially my  
 13 leased water right, that, you know, it was flood  
 14 irrigated at one time and so now there's corners  
 15 that don't get watered anymore, and then just  
 16 the less water we use, I mean, I could probably  
 17 go water another 80 or 100 acres somewhere.  
 18 And -- and you can go and ask for -- you  
 19 can do some -- I know you can do some requests  
 20 for -- for move, but out of that -- out of that  
 21 one well, if I remember right, what it was, it  
 22 was kind of odd, you can -- you can request to  
 23 move it -- well, they got 300 feet, half mile,  
 24 two mile, I think it was something like you can  
 25 request to move it two mile down the road and

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1 put in a second well, but I could not do it out  
 2 of the existing well. I couldn't -- yeah, I --  
 3 I think that's right. I -- I don't mean to be  
 4 vague, but it's been awhile since I did it so --  
 5 but I remember thinking, well, that's kind of  
 6 funny, I can't do it out of the existing well  
 7 but I can go dig another well two miles away and  
 8 do it. So there is some -- you can do some  
 9 moving around, I don't know the exact details;  
 10 I've never gotten one that I pushed it far  
 11 enough to find out so ...  
 12 Q. Well, with the limits that have been placed on  
 13 water users due to the over-appropriated nature  
 14 of the east basin storage area, how do you  
 15 understand that -- a right to withdraw up to  
 16 120,000 acre-feet in maintenance credits would  
 17 now be allowed?  
 18 A. Back up, Tessa. State that again, I was not  
 19 evidently listening for the first five words  
 20 so ...  
 21 Q. Okay. So understanding the limitations you've  
 22 experienced and others with the  
 23 over-appropriated aquifer in the past, how do  
 24 you understand there would now be  
 25 120,000 acre-feet to grant in AMCs if the

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1 aquifer is truly over-appropriated?  
 2 A. Well, how do I understand it? I guess I  
 3 understand it to the point that at least  
 4 District 2 has established, and I believe  
 5 40 years plus ago, that in that storage basin  
 6 area, that it was over-appropriated and that  
 7 there is no more available water in that area,  
 8 no more additional usable water in that area  
 9 without causing problems, low wells and such.  
 10 From the AMCs, which the City is promoting,  
 11 I guess I see it as that they decided that  
 12 District 2 doesn't know what they're talking  
 13 about and that there's extra water there to be  
 14 used, all you got to do is go get an engineer to  
 15 prove that District 2 was wrong and that there's  
 16 all kinds of available water. I mean, 120,000  
 17 acre-feet, that's a lot of pivots, that's a lot  
 18 of landowners that have missed out on wealth.  
 19 If that's not -- if that's there, there's been a  
 20 lot of landowners that have been told no that  
 21 they should have been told yes. If it's there.  
 22 So I guess -- I guess the thing is if  
 23 you've got the money to hire an engineer and  
 24 prove there's water there, you can have water.  
 25 If you're the average fella and you don't have

1 any extra money to do -- or, you know, most of  
2 us are trying to get 120 acre-feet, it's pretty  
3 hard to justify paying the price of an engineer  
4 to -- to go and get 120 acre-foot water right.  
5 If I was going to put up 1,000 pivots, maybe I  
6 could afford it.  
7 So at best, if -- if the water is there and  
8 we've been wrong, then for 40 years people have  
9 been told no have been told no wrong and they  
10 were first at the table. Or the water's not  
11 there and we've decided that if we say it's  
12 there, it's there. That I don't know, I mean,  
13 I'm skeptical on both sides of it here. It's  
14 like either the water was there and we were lied  
15 to, or the water isn't there, take your pick.  
16 Q. And if the water is there, is there an economic  
17 impact to leaving it in storage rather than  
18 making a beneficial use?  
19 A. I guess he won't mind, he gave me the permit,  
20 Floyd Holle, I said -- we were at dinner one  
21 evening, I said, man, I wish I could find  
22 somebody who had take -- oh, I'm off, sorry.  
23 I hope he doesn't mind me using his name  
24 there, he gave me the permit, I think it's even  
25 in the exhibit here somewhere. He has a permit

1 that he requested a water right 40 -- I believe  
2 it's 40 years ago now. He was told that it's  
3 over -- that area is over-appropriated.  
4 So that -- let's assume, I don't know  
5 whether it was a quarter section or not, I  
6 didn't think to look at what he requested in  
7 acre-feet, but let's assume it's a quarter  
8 section, that's 130 acres, I'm going to say he's  
9 missed out on at least 100 bushel a year for  
10 40 years on each acre. Anybody got their  
11 calculator running, let's do it on an acre, I  
12 guess. I'm 100 bushels short of corn for  
13 40 years, is that 40,000 bushel? Am I fast  
14 enough? Let's say it's 40,000 bushel, an  
15 average price of \$4,000 -- of \$4 a bushel for  
16 my -- it's probably 2.70 but for my ease of --  
17 so four fours, each acre, Mr. Holle, I believe,  
18 missed out on \$16,000 on 130 acres over  
19 40 years. How many million is that?  
20 That's one person. If we could have done  
21 that 120 times -- well, that's not 120 times,  
22 he's talking about 130 acres, they're talking  
23 120,000. They're talk -- so I guess they'd be  
24 talking about 1,000 times. So if we did that  
25 over the community 1,000 times, how many

1 millions of dollars is that into the community  
2 that we've missed out on?  
3 Q. And when you say into the community, can you  
4 elaborate on what you mean by that?  
5 A. I'd say the -- the Bentley, Halstead, the  
6 aquifer area, that aquifer area, where --  
7 wherever it's been said it's over-appropriated  
8 and you can't get a permit. If I can -- I mean,  
9 I've got new permits just south of the basin  
10 area, I can't -- I couldn't claim that there, I  
11 got what I -- I got when I asked. But I'm  
12 talking about anything that is in the area that  
13 is said to be over-appropriated and it's been  
14 for years and years, that's wealth that the --  
15 that's wealth that could have been created in  
16 the area.  
17 Q. And is that limited to the landowners and  
18 farmers, or does it have a broader --  
19 A. I think everybody else gets it but the  
20 landowner. He -- he will have gotten the  
21 millions of dollars that -- the landowners would  
22 have gotten the million dollars, but they would  
23 have spread them to the co-op, they would have  
24 spread them to Mr. Carmichael's pipe business,  
25 they spread them to the car dealers, to the

1 machinery dealers. I mean, you know, farmers  
2 are notable that we're -- we don't -- we don't  
3 have great big high returns on investment, we go  
4 spend it. So it's huge amounts of money that  
5 has not been brought into the neighborhood over  
6 40 years.  
7 Q. Now, the Mr. Holle you mentioned, is he the same  
8 Mr. Holle who gave public comments regarding  
9 this denial?  
10 A. He is.  
11 Q. The City modeled a drought based off of the  
12 2011, 2012 period, repeating for a total of an  
13 eight-year drought. Going back to your  
14 experience in 2011 and 2012, how were you  
15 impacted by that drought scenario?  
16 A. In Sedgwick County, I had one well -- I've  
17 obtained most of my wells since then, but my one  
18 leased well, it started surging when we would  
19 pump flood irrigation; we had it connected to a  
20 pivot and then we were doing that 80 acres that  
21 had not yet been changed to a pivot, it started  
22 surging a little bit. We never got to the point  
23 we couldn't water, but it was kind of like, ooh,  
24 this is not good. That would probably be the  
25 effect I had there.

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1 I do also have several pivots and water  
 2 permits in Pratt County. We were affected there  
 3 in that evidently it rained even less there and  
 4 we came to the end of our -- our water  
 5 appropriations out there. We were down to the  
 6 one circle section, that was, I guess -- you  
 7 know, somebody might shoot me, but that was back  
 8 in the day when kind of like, well, I've -- I've  
 9 spent all this money, we've used all this water,  
 10 if I quit watering now, I will have wasted the  
 11 water and I've wasted the money. So we took our  
 12 chances on whether we're going to jail or not,  
 13 and we went ahead and pumped a couple of times.  
 14 And we still came up with a short crop. Just  
 15 due to the heat and such.  
 16 And then the next year, we paid a fine --  
 17 then we paid a fine, and the next year we had to  
 18 not use our -- whatever over-usage, overpumping  
 19 we did, we had to pull it off of 2012. And so  
 20 we were short that year too on water. We  
 21 started that way, we planted as such, we -- you  
 22 know, we planned on it. When we ended '11, we  
 23 didn't know we were planning on it.  
 24 And then there was offers of doing some  
 25 flex stuff showed up about that time too. But

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1 in -- in Sedgwick County, in this aquifer here,  
 2 surging was the worst I came up with, and I  
 3 don't remember if that was '11, '12, or both. I  
 4 know it kind of did it for two years, but that  
 5 would have been the -- that would have been the  
 6 most of it there.  
 7 Q. The -- did you pursue a multi-year flex account?  
 8 A. I have -- I had one at one time. I had one flex  
 9 account, it was not in Sedgwick -- it was in  
 10 Pratt County. I have not done any more due to  
 11 the fact that I think it's 10 percent you give  
 12 up -- it's based on the usage of that particular  
 13 well or that permit. If -- if it's a well where  
 14 you use -- let's just say it's 180 acre-foot  
 15 permit, if it's a well that you're pumping right  
 16 up against that 180 foot most years, there's  
 17 no -- then -- then that's where you need a flex.  
 18 If -- if you've got a well where, you know, you  
 19 only pump 120 acre-feet annually and you've got  
 20 a 180 acre permit, there's really no reason to  
 21 give up 10 percent of your water right in order  
 22 to make sure you can make it the next  
 23 year 'cause generally you have that -- you've  
 24 got some cushion there, I guess I should say.  
 25 So really the only wells that makes sense

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1 on is a well that you're right up against your  
 2 pumping every year. They do not -- I've never  
 3 understood how that is, but you don't give up --  
 4 you don't give up any of your water right for  
 5 that one that's pumped up next to the permit  
 6 every year, there's no loss there. So that  
 7 makes it a positive.  
 8 If you're going to start one, though, you  
 9 don't generally just want to pull one that  
 10 you've pumped clear up against your deal and --  
 11 and pull a flex permit because now you're  
 12 starting with nothing in the bank if -- per se,  
 13 I guess I should say. So if I had a well that  
 14 is pumped up hard against the permit every year  
 15 but then all of a sudden we get a really wet  
 16 year and I didn't pump up against it that year,  
 17 you can -- if you apply early enough in the  
 18 fall -- well, I think I'm right on this, if you  
 19 apply early enough in the fall, then you can  
 20 take that water that you didn't use that year  
 21 and apply it to your five-year flex now and  
 22 you're starting with water in the bank.  
 23 So that makes it -- that's the one scenario  
 24 where it works is a well that gets pumped hard  
 25 most years -- or I say hard, up against it's

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1 maximum, and then you get a year like, oh, good  
 2 deal, I didn't use anywhere near enough and now  
 3 I've got -- I've got some in the bank and I can  
 4 use that and spread that, flex that over my next  
 5 five years.  
 6 But, you know, if you start one -- if you  
 7 start one dry, it's pretty hard to -- you  
 8 know, 'cause your -- your one year to flex  
 9 might -- and your one year to flex might be last  
 10 year and it -- it worked great that year, but --  
 11 but you're going to be scared the whole five --  
 12 four years. I say scared, you're going to look  
 13 at it as, well, I got nothing, I got nothing, I  
 14 got nothing, and you could end up with it the  
 15 fifth year but -- so it's -- and then they're --  
 16 you know, you got to watch them really close, I  
 17 mean, they're -- of course, you're watching that  
 18 well close anyway so I guess that doesn't make  
 19 any difference.  
 20 But, anyway, don't tend to use them because  
 21 if you got a well where you conserve anyway over  
 22 what we've done, you know, you give up your  
 23 10 percent, that doesn't make any sense. And I  
 24 think it's 10 percent, I'm using that number,  
 25 somebody can probably correct me before the

1 day's over, I'm sure, but I think that's what  
2 you lose.  
3 Q. What investments have you made in your property  
4 based on having a water right?  
5 A. What improvements have I made on my property  
6 based on -- well, on properties that don't have  
7 a water right, I've put up a irrigation system  
8 and we grow bigger crop. I guess that would  
9 be --  
10 Q. Can you clarify that, you said on properties  
11 that don't have a water --  
12 A. Well, on property that did not -- the way you  
13 asked the question -- say -- ask your question  
14 again.  
15 Q. Okay.  
16 A. Ask your question again, please.  
17 Q. On property that you have a water right, what  
18 investments have you made based on having that  
19 access to water?  
20 A. It would be irrigation equipment. I don't know  
21 what else I would have.  
22 Q. And if you lose the water, does that irrigation  
23 equipment maintain its same value?  
24 A. No, it would -- it would lose all the value of  
25 what it cost to put it up, it would lose the

1 they're all at. I have a general idea that  
2 they're north and west of Bentley and to the  
3 west and maybe south of Halstead for the bulk of  
4 them. I don't know where they're all at  
5 exactly, but I do know that area is the heaviest  
6 area.  
7 I guess there's some basin deals where they  
8 put the water in on top of the ground, let it  
9 soak in, I don't -- I don't know where those are  
10 at. I know there's one they intended to do  
11 there next to Bentley, but I've never -- I don't  
12 know if they use it or not. Somebody said they  
13 didn't. I don't know about that. But that's  
14 what I understand it to be is in the bulk of  
15 where they pull their water is in the bulk of  
16 where they put their recharge systems.  
17 Q. And so where that water is stored, do you know  
18 where that is in relation to your property?  
19 A. They would be to the north.  
20 Q. Where the water is physically stored, not  
21 necessarily injected but where the water is  
22 actually stored?  
23 A. I believe the storage of it can become on beyond  
24 the aquifer -- the storage area, their -- their  
25 pumping area. If you raise the aquifer here,

1 value of what it cost to take it down,  
2 depreciation. I mean, when I say depreciation,  
3 that pivot's worth more to me on my property  
4 than it is on the neighbor's property 'cause  
5 Josh is going to take his cut out of the middle  
6 there when they move it down the road. And so,  
7 you know, it's worth -- it's not -- and you have  
8 depreciation, which is real, I mean, there's  
9 use, you know, and if you're in a salty area,  
10 then someone doesn't want it anyway. But I can  
11 get -- I can get more out of a used piece of  
12 equipment than my neighbor can, how's that?  
13 Q. Are you familiar in general with the ASR  
14 project's multiple phases, including this  
15 current modification?  
16 A. Oh, I -- I'm -- I have a general sense of it.  
17 I -- I pay attention, I ask questions, I listen.  
18 Q. Do you understand that the program allows the  
19 storage of water in the Equus Beds?  
20 A. I do.  
21 Q. Where do you understand that water is being  
22 stored?  
23 A. I understand that there's a basin area where  
24 they put -- well, I know there's an area where  
25 they have recharge wells, I don't know where

1 it's going to go over there. I mean, if I --  
2 you know, if you got a water hole over -- water  
3 here and there's lower ground here and you get a  
4 bit of a ditch it's going to go down. So in  
5 my -- this is -- this is my knowledge that water  
6 runs downhill and fills voids. I -- I assume  
7 that the same thing happens underground, if you  
8 raise an area, it's going to flow out, and if  
9 you lower an area, it's going to flow in. The  
10 larger the quantity of the water, the bigger the  
11 area that gets raised and lowered.  
12 Q. So is the area where the City's storing water  
13 underneath the land that you farm?  
14 A. Ask it again, Tessa, I'm not sure I heard the  
15 last little bit.  
16 Q. Is the storage area underneath the land that you  
17 farm?  
18 A. I would say what they call their -- well, it  
19 could be -- it could become under my land if  
20 they store enough, yes.  
21 Q. So with a full aquifer and attempting to store  
22 even more water, do you think that would be  
23 under your land?  
24 A. Possible.  
25 Q. Do you know the value of your water right?

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1 **A. Well, the value to me is the extra return on**  
 2 **investment for growing an irrigated crop versus**  
 3 **a dryland crop, that's my value. I don't know,**  
 4 **there's probably -- there's probably a**  
 5 **accountant's term for that, or accounting term**  
 6 **for that.**  
 7 **And then there's also what value would it**  
 8 **have if I were to sell it on the market. And I**  
 9 **suppose that would have to do with who needs the**  
 10 **water right, how badly they need it, and what**  
 11 **they need to use it for. You know, I mean,**  
 12 **it's -- it's demand, it's whatever the demand**  
 13 **is.**  
 14 **So, no, I don't know because generally in**  
 15 **our area here, water rights are not auctioned**  
 16 **off, they're not sold. Probably part of it is**  
 17 **due to your inability to use it on another piece**  
 18 **of ground or another -- you know, there's always**  
 19 **permitting -- there's other uses that it can be**  
 20 **used for, but it's not simple, and unless it's**  
 21 **just readily there, there's not a market for it.**  
 22 **And you got to have somebody who doesn't already**  
 23 **have enough water to supply their needs and they**  
 24 **need the water -- they need that water for their**  
 25 **needs.**

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1 **You know, what is it that -- you know,**  
 2 **there's always those deals when they have a**  
 3 **hurricane, everybody's talking about, well,**  
 4 **there's people selling water for \$20 a little**  
 5 **bottle. Well, there's a big need for it. When**  
 6 **there's all kinds of water around and there's**  
 7 **not a hurricane or where there's not a disaster,**  
 8 **that bottle of water is worth whatever QT can**  
 9 **get out of it, I guess. So timing is part of**  
 10 **it, I mean, in the middle of a drought and**  
 11 **everybody's running short, that water could be**  
 12 **worth who knows how many more times more than it**  
 13 **is when we have plenty of water. I mean, timing**  
 14 **is -- is everything.**  
 15 **Q. So of the modifications proposed by the City**  
 16 **that we're considering throughout these**  
 17 **hearings, one of those is lowering the minimum**  
 18 **index levels. Those lowered levels vary**  
 19 **throughout the basin storage area, but I think**  
 20 **the minimum is 10 feet. What concerns do you**  
 21 **have about lowering those levels below the 1993**  
 22 **levels?**  
 23 **A. Well, I -- on this subject, I'm going to say I**  
 24 **was just beginning to farm up in this area and**  
 25 **to have a water right to worry about. I do not**

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1 **remember '93 myself, so any information I have**  
 2 **about '93 is what has come out of the discussion**  
 3 **of all of this.**  
 4 **And I do know that I have neighbors and**  
 5 **stuff that said it was -- it was getting dicey,**  
 6 **people were starting to have wells that burped**  
 7 **and pumped a little air; it was like, oh, shoot,**  
 8 **this is -- this is not -- this is kind of the**  
 9 **limit. And I also have -- to me, I guess the**  
 10 **fact that the City of Wichita agreed that this**  
 11 **should be the safety level that should be**  
 12 **interjected in their operating agreement with**  
 13 **District 2 and DWR, I'm taking it that everybody**  
 14 **thought that was probably a level that we should**  
 15 **try to attain or keep there in that everybody**  
 16 **knew that started to cause problems, people got**  
 17 **spooked.**  
 18 **So I guess that's my -- my take on the '93**  
 19 **levels is those that were there and experienced**  
 20 **it, including the City of Wichita, thought this**  
 21 **is as low as we should go. So the idea that we**  
 22 **should be pulling that down seems like at least**  
 23 **one party has decided, well, we don't care, we**  
 24 **can -- we can live with it. It doesn't sound**  
 25 **like everybody else can necessarily live with**

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1 **it.**  
 2 **That would be my -- and -- and my other**  
 3 **thing about it is, you know, if you're not going**  
 4 **to -- how do I put this? I guess there's a part**  
 5 **of me that just says, we've always got this**  
 6 **level, we shouldn't go there but maybe I should**  
 7 **go -- it's kind of like kids, you know, you tell**  
 8 **them you shouldn't go over there, that water's**  
 9 **deep. Well, can I just go another foot, can I**  
 10 **just go another foot? And the one time -- and**  
 11 **now they're -- now they're drowning. I mean,**  
 12 **it's like give me, give me, give me, and pretty**  
 13 **soon then you're a mess. And I -- so I -- I**  
 14 **guess I look at it as a -- it's a safety valve**  
 15 **on all the other things that we want to do.**  
 16 **Q. And throughout this process over the past few**  
 17 **years, have you seen, read, or heard anything**  
 18 **that makes you believe going below the '93**  
 19 **levels is safe for the aquifer?**  
 20 **A. I'm going to repeat to be sure, you say have I**  
 21 **seen, read, or heard anything that would make me**  
 22 **think it would be safe to go below the '93**  
 23 **levels? Wichita's testimony is that no problem,**  
 24 **let's go. I guess that's what I've had.**  
 25 **Q. Do you know if the City modeled drawings down to**



1 the proposed minimum index levels, including the  
2 10-foot contingency?

3 **A. I -- I guess I am aware that they modeled that  
4 we can use 120,000 acre-feet spread over a  
5 20,000 -- over an eight year -- they modeled it  
6 for full -- what my understanding of their model  
7 is that if we're -- aquifer is full and we run  
8 into 100 -- what, a 1 percent drought, which  
9 would be, what, eight years of -- you know, that  
10 the aquifer can recover from that. What they  
11 did with the '93 level, I do not know  
12 specifically, no.**

13 **Q. You do think it's important to model whether the  
14 aquifer can recover from any of the proposed  
15 pumping scenarios?**

16 **A. I would say that would be paramount. I mean, we  
17 can set here and say we can pull whatever, but  
18 if we can't -- you know, I mean, I guess here's  
19 my thought. Let's use '93 as a -- as a -- let's  
20 just use '93 as an example, we're starting to  
21 pump air. Well, that's all great, it rained the  
22 next year, or it began raining or, you know, we  
23 recovered. If you stretch that out for years  
24 and we go to a depth that nobody's ever been to,  
25 how many years does that take us to get back**

1 just to function?

2 I mean, we -- we're -- we're going into --  
3 we're going into a situation, to me, when we  
4 start dropping below these levels, it's all what  
5 somebody thinks is going to happen. We know  
6 what happened from '93 levels up, we're  
7 experienced. We are not experienced below that  
8 level, Wichita's not experienced below that  
9 level. I know they have smart people that set  
10 around and make numbers on their computer and  
11 they tell us, oh, it'll -- okay, it'll be fine,  
12 but I don't know that they've said if they were  
13 to pull their full 120,000 acre-feet of credit,  
14 along with their 40,000 and everybody else  
15 pumping at their full amount, is it in this --  
16 is it in their modeling that we can recover this  
17 and how many years does it take, does it take  
18 two years, does it take one year, is it  
19 20 years, I mean, is that in this? You know, I  
20 haven't read it well enough to know that.

21 **Q. A second component to the proposal is the  
22 120,000 acre-feet in AMCs, which you briefly  
23 touched on. Do you have concerns specific to  
24 the accumulation of future use of those  
25 maintenance credits?**

1 **A. It's my understanding that is an accumulation of  
2 ASRs that they have recharged and AMCs, correct,  
3 that -- that number is all together, correct?**

4 **Q. That is my understanding.**

5 **A. I just want these -- that's my understanding, I  
6 thought I would ask before I -- the problem with  
7 an AMC is that -- where did we come up with  
8 this? This is -- this is not water that the  
9 City's provided the whole system. It's -- it's  
10 a fake deal, I mean, it's double dipping. I  
11 mean, if I went to the bank and said, hey, I've  
12 got \$1,000 here but I'm going to go deposit it  
13 in the bank next-door, but when I come back over  
14 here, I want you to give me \$2,000 out of my  
15 account. I know I have \$1,000 in my account,  
16 but I'm going to go put this money over in this  
17 bank and I'm going to put 1,000 over there, but  
18 when it -- when I have a dire need and, you  
19 know, the kids have wrecked the car and all this  
20 and I need more money, I want to come back and  
21 you're going to give me \$2,000 'cause I  
22 deposited 1,000 over here in this bank. Where  
23 does this come from?**

24 **Now, I know there 's water -- there's extra  
25 money in that bank, I guess, of course, they can**

1 print it, but, you know, I know there's water in  
2 the aquifer that's there that's below that '93  
3 level, so I don't understand how it is that  
4 we're going to take a gallon of water out of the  
5 Arkansas, Little Arkansas River, we're going to  
6 send it to Wichita, which I think that's a bit  
7 of a privilege right there. That did -- that  
8 was not in the original MOU, I don't believe. I  
9 think that was a change that the City come and  
10 said, hey, I know we have an agreement, we need  
11 to negotiate some more. I mean, it kind of  
12 seems to be a theme. So we need to send this  
13 water to Wichita, we're not getting it used, we  
14 can't get it in the aquifer, can we send it to  
15 Wichita, and they were granted that privilege.

16 **So I don't know, I think there's, what,  
17 nearly 40,000 acre-feet that they've got out of  
18 the Little River, acre-feet, that's pretty  
19 substantial. So they get the opportunity to  
20 send that to Wichita, and I don't get that, hey,  
21 that's not good enough, we need more water  
22 rights. Well, how in the world are we going to  
23 get more water rights? Well, hey, we can --  
24 there's more water in the -- there's more water  
25 in the aquifer, an engineer told us there is, so**

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1 let's go ask for a credit for that and we can  
 2 pull that water out later when it's the most  
 3 valuable.  
 4 Like in the middle of the hurricane or in  
 5 the middle of the drought, we're going to go  
 6 pull that water when it's most valuable. We're  
 7 going to store it under these people's land  
 8 while it has minimal value, and then when we  
 9 need it the worst and it's the most valuable to  
 10 the irrigator and it's the most valuable to the  
 11 homeowner, we're going to go make this thing  
 12 dangerous, possibly, and we're going to sell the  
 13 water while it's the most valuable, or we're  
 14 going to have the water when it's most valuable.  
 15 This AMC deal is outside of water  
 16 authority. There -- the only way they have that  
 17 water is that they're using something that they  
 18 claim they left in the aquifer. I cannot claim  
 19 anything -- use anything that I claim that I  
 20 left in the aquifer.  
 21 Q. If these AMCs are approved, assuming that  
 22 happened, how would you want to handle the  
 23 priority date, should those be junior or senior,  
 24 and understanding that something stored in the  
 25 aquifer for 100 years migrates out and it's

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1 constantly being recycled, how do you attach a  
 2 junior or senior date to a fluctuating credit?  
 3 A. Well, I'm first going to qualify my answer with  
 4 I don't think anything ought to happen with  
 5 AMCs. They -- they don't -- they should not  
 6 exist. I don't know who come up with the term  
 7 or who -- who thinks this is an idea but -- so  
 8 I'm qualifying my answer because I'm answering  
 9 it saying I don't think these should even exist.  
 10 So I guess I'd put my answer back to even  
 11 the ASR credits that if you -- if they -- if  
 12 they got a credit on December 2020, they put it  
 13 in there on 2020, that that is the priority date  
 14 of that credit, and that any other well that has  
 15 a priority date ahead of that is ahead of that.  
 16 As far as I'm concerned, they should be junior  
 17 if they're junior, and if they're senior  
 18 they're senior. That would be my -- that would  
 19 be my answer to your question.  
 20 Q. Why did you choose to intervene in this matter?  
 21 A. Excuse me a moment. The AMCs. I -- I -- if  
 22 this is allowed, it's not just the Equus Beds  
 23 Aquifer that this affects. This sets precedent  
 24 for the whole state that if you -- what do I  
 25 want to say, how do I want to put it? If you're

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1 big enough, if you're powerful enough, and you  
 2 can get enough people to agree, you don't need  
 3 to follow the law, you just set regulations and  
 4 do what you want.  
 5 Our whole -- every -- as has been mentioned  
 6 many times, the whole water appropriations of  
 7 the State of Kansas is based on a per annum  
 8 basis, and it's not based on water that I could  
 9 have put in the aquifer but I didn't. And they  
 10 also claim -- I mean, in order to get this AMC  
 11 thing, you have to be so arrogant as to think  
 12 that you're the only one that causes the aquifer  
 13 to stay full or at a good level. Farmers all  
 14 conserve, God sends rain, rivers push it in.  
 15 Wichita is the big -- the big boy, that's  
 16 no doubt, but they're not the only ones there.  
 17 And the idea that they are is ludicrous. And  
 18 the idea that, well, we have an ASR so we  
 19 deserve it, I don't get that at all. I don't  
 20 know what else to say to it outside of I just  
 21 keep talking just for the sake of hearing  
 22 myself, so I guess that's my answer.  
 23 Q. Yesterday, Mr. Basore talked about a lack of  
 24 trust. Would you agree --  
 25 A. A lack of what, I'm sorry?

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1 Q. Trust when it comes to negotiating with the City  
 2 or reaching an agreement with the City. Do  
 3 you --  
 4 A. Oh, oh, okay. I follow you. Well, I would say  
 5 the ASR from the beginning to the end creates an  
 6 element of lack of trust. I remember the very  
 7 first meetings I went to was about the ASR, and  
 8 I don't remember the man's name now, but he  
 9 stood up there on the podium and he said, this  
 10 is great for everybody, it's a win-win-win,  
 11 we're going to put water in the aquifer and  
 12 store it for as -- for a rain - a rainy day - a  
 13 dry day and we're going to push the salt back in  
 14 the Burrton salt plume. That was the big -- I  
 15 mean, that was the big selling point.  
 16 And I was kind of like, well -- I guess I  
 17 was neutral. I mean, I live in Wichita, I  
 18 had -- I had dealings -- you know, when you live  
 19 there, you live close, you have some interaction  
 20 with Wichita; I have to say my level of trust  
 21 even from that was a little slim. But as far as  
 22 it goes with this and the ASR, I was kind of  
 23 neutral.  
 24 I know there were people that say -- you  
 25 know, they were afraid that they wouldn't get

1 the water cleaned before they got it in and this  
2 and that. I -- I -- I don't reject their --  
3 their worries, it -- something can always go  
4 wrong when you start doing this kind of thing,  
5 but my deal was kind of like, yeah, right, if  
6 they can. I -- I -- I guess I was doubtful, but  
7 it wasn't -- that wasn't a trust issue, I was  
8 just kind of doubtful.

9 But they now claim that they have -- and I  
10 believe this is -- it's in -- I think it's in  
11 there somewhere, but I -- I remember setting  
12 when we were at the hearings over at the church,  
13 Daniel was testifying to the quantity of water,  
14 that if they used all their recharge wells, how  
15 many million gallons they can do a day. I  
16 thought it was in the low 30 millions, that's  
17 about 100 acre-feet a day. I don't know what  
18 they've recharged to this date because the  
19 latest numbers I could find was 2016, that they  
20 put approximately -- I think they got \$6,000 -  
21 \$6,000 - they got about 6,000 acre-feet of  
22 credit. I don't know what their bulk injection  
23 was 'cause I know their credits get some  
24 discounts for, you know, different wells, where  
25 they're at and all that; so I don't know what

1 go back and -- we could do the science, we could  
2 probably go back and look and see. I don't have  
3 that number in front of me, I don't keep all the  
4 records, but I'm just pretty sure the aquifer  
5 hasn't been full for all 3500 days -- well, be  
6 3400 because they pumped 100 days. So I -- I  
7 don't trust that that's worked.

8 The other thing that actually, I guess,  
9 probably came before that that I -- I was kind  
10 of like, you got to be kidding me, is these bank  
11 storage wells. I guess Phase I, maybe there's  
12 some that work, I don't know, but Phase II, I  
13 remember when I was told that they were going to  
14 put wells along the bank of the Little Arkansas  
15 and put them to bedrock, but that was river  
16 water. That was my first day of this ASR is a  
17 problem to me because I thought, that's nuts,  
18 you can't do that. Oh, yeah, yeah, we can pull  
19 water from bank storage next to the alluvium,  
20 next to the river and it won't be pulling out of  
21 the -- the aquifer.

22 I'm sitting here thinking, this is a City  
23 of Wichita thing, they're going to turn that  
24 water in circles and get credits for it. And I  
25 guess, fortunately, they were able to have to

1 their total quantity is, but they've accumulated  
2 6,000 acre-feet out of, what, ten years.

3 And they can pump -- they tell us that they  
4 got the ability to inject 100 acre-feet a day  
5 and all they can come up with is 6,000  
6 acre-feet. 30 days is 30,000, so they've --  
7 they've pumped, what, 100 days, 10 -- 100  
8 acre-feet a day, ten days is 1,000, 100 days is  
9 10,000. So in 100 days, they could do -- or  
10 less, they could do what they've done and they  
11 tell us that it works. I doubt it, I seriously  
12 doubt it.

13 I -- I submit, my opinion, that if the ASR  
14 worked, we wouldn't be here today. That's why  
15 we're here is because ASR doesn't work, yet they  
16 tell us it does and they're still telling us it  
17 does. And I -- I don't think they've proven it.  
18 And they're going to say, well, the aquifer is  
19 full. The aquifer was not full ten years ago  
20 when they tried it, when they started it.

21 They had 100 days. There's 300 days in a  
22 year, my calculation, so we've had ten years,  
23 they've had 3,000 days, 3500 days, whatever,  
24 surely there's been more than 100 days that the  
25 aquifer was not full. I think we could probably

1 put in test wells and show that it didn't pull  
2 it out of the aquifer. So somewhere along the  
3 line here, somebody may correct me later in the  
4 day, but it's my understanding that that -- it  
5 was pulling water out of the aquifer and they  
6 had to go to surface only.

7 They told us that would work, they spent  
8 millions of dollars to have somebody tell them  
9 that it worked and then go experiment with it,  
10 and it didn't work. They told us they can get  
11 it in the ground, and I submit it doesn't work.  
12 They're going to argue with me and tell me that,  
13 oh, yeah, yeah, it works, it's just full. Well,  
14 reality doesn't say that it's worked.

15 So that's what I have to look at is  
16 reality. You can blow smoke at me all day long,  
17 but I'm looking at reality. You can't pull the  
18 water out of the aquifer next to the river and  
19 call it river water, they proved that, and I  
20 think we've proved that it -- they can't get the  
21 water in the ground.

22 I think it's sad that none of it works, but  
23 it doesn't seem to work, and we've been told  
24 twice that this works. So far what it has cost  
25 the community is a bunch of this, which takes up

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1 a lot of our time, but past that, it's been  
 2 mostly expense for Wichita. It's not been our  
 3 problem, other than they do a lot of digging up  
 4 and tearing up people's fields, and you got  
 5 that. But the cost has been minimal, let's say.  
 6 Well, let's say that this 120,000 acre-feet  
 7 deal and allowing it to go to '93 levels, and,  
 8 you know, they're asking for the '93 -- they're  
 9 liable to come back and ask for another 10 feet,  
 10 you know, I mean, renegotiate, renegotiate.  
 11 That's a sideline, I guess I shouldn't have gone  
 12 there.  
 13 But if this goes wrong, then it's serious  
 14 for everybody because if the irrigation wells  
 15 quit pumping and everybody's homes quit pumping,  
 16 or let's say it's minimal and we don't get a lot  
 17 of less pumping but we get the salt pulling in  
 18 from the northwest and we get the salt coming  
 19 from the south and it starts damaging all of  
 20 that, those systems that we paid for, that we  
 21 buy from Josh, if they're not lined, they're  
 22 13 years and they fall down, I've got to buy  
 23 another system. The saltier it gets, the  
 24 worse -- and then it gets to the point where you  
 25 can't grow certain crops, and then you're into

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1 Richard's testimony that ...  
 2 So if they're wrong on this one, it's  
 3 expensive to everybody. It's not Wichita's  
 4 bill, it's everybody's bill. This is why I'm  
 5 here today. If Wichita wants to blow their  
 6 money off and make mistakes, everybody's got --  
 7 they've got their right to do that, I don't  
 8 care. But if it's going to cost everybody in  
 9 the neighborhood, I think it should not be  
 10 allowed.  
 11 And the AMCs, I've only -- I don't even  
 12 think we should be talking about whether or not  
 13 we're going to use the 120,000 acre-feet 'cause  
 14 I don't think the AMCs should ever be -- we  
 15 should never have got past that point. It  
 16 should have been shut off before -- when that  
 17 word come up, somebody should have said, no,  
 18 that's illegal.  
 19 Q. Has the City or anyone contacted you about  
 20 purchasing your water rights for use, or  
 21 renting, for use during a drought?  
 22 A. No.  
 23 Q. Has -- I think you've probably been here when  
 24 the City at one point or another has said if  
 25 this proposal is not granted that they will have

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1 to make space in the aquifer. Does that sound  
 2 familiar?  
 3 A. It does.  
 4 Q. And what are your reactions to the idea of  
 5 making space in the aquifer?  
 6 A. I have the concern of making space in the  
 7 aquifer in that I don't think they have the  
 8 ability to recharge it. But let's say for the  
 9 sake of the discussion here that they can  
 10 recharge it, it's their 40,000 acre-feet, they  
 11 can do with it what they want. I think it's  
 12 poor judgment, I don't know, I guess you could  
 13 maybe say unethical, I don't know. I guess  
 14 that's not for me to judge. But they act as  
 15 though they have no other source of water. They  
 16 have Cheney, which is an excellent source of  
 17 water. They've learned to use it, they've  
 18 learned to use it to the point that they backed  
 19 off of their usage and it contributed to helping  
 20 the aquifer move up.  
 21 So the idea, I mean, I heard it -- I mean,  
 22 I heard Mr. Pajor stand up on the stage, I  
 23 believe that's where I heard it, be careful of  
 24 that, but I -- I kind of felt that's where I  
 25 first heard it that if you don't allow us to do

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1 this, we'll just pump a hole in the aquifer  
 2 'cause we have to because we have to have water  
 3 rights. Well, I don't know anywhere in the law  
 4 of Kansas that it says if I have to have a water  
 5 right, I should have -- I should get one.  
 6 You should get them the way everybody else  
 7 gets them, you go to an area where it's  
 8 unappropriated -- where the appropriation --  
 9 where it's not over-appropriated and you go  
 10 through the whole system that I said of getting  
 11 a permit. And if there -- you do the safe  
 12 yield, and if the safe yield is good and you  
 13 can, you know, rent, buy, borrow, whatever that  
 14 person's land and you get along with them and  
 15 you can stick a well in the ground, have at it.  
 16 But the idea that you're going to pump  
 17 water to Wichita out of the Little Arkansas  
 18 River and then get a credit for that, a second  
 19 using of other water because you took this water  
 20 to town, you're getting 2 acre-feet of water for  
 21 every acre-feet that you actually have, and  
 22 you're using water that evidently everybody else  
 23 could be using.  
 24 I'm going to have to have you tell me your  
 25 question again because I got sidelined on what I

1 just really wanted to say. So if you could give  
2 your question again, maybe I'll do a better job  
3 of finishing up.

4 Q. I think you've answered adequately, but I asked  
5 your reaction to the City's plans that they need  
6 to make space in the aquifer.

7 A. Oh, yeah, sorry, I got me off there. Yeah, I --  
8 I think they -- if that's what they feel they --  
9 they got to do, then I -- I have no objection  
10 other than I think it's not a good idea. But  
11 from a legal standpoint, it's their water, they  
12 can do it.

13 And if they can recharge it, go after it.  
14 I guess my biggest concern is I don't think they  
15 can recharge it, I've stated that, I think  
16 they've proven they can't recharge it. Do they  
17 have a plan that after they pump a hole and they  
18 can't get it in the ground, what are they going  
19 to do about that, what's the plan? Is there a  
20 plan? I mean, they've said we have to do this  
21 to do this, but you've never proven that you can  
22 do this. I don't -- I don't buy it.

23 And -- and they're going to say, well,  
24 we -- you know, and they may say, well, the  
25 river's not flowing right and dah, dah, dah,

1 dah, dah. They may give me ten reasons why they  
2 couldn't recharge, and they're going to say I'm  
3 not being fair. I'm going to say, those ten  
4 reasons could be here in the next ten years too  
5 and you still can't recharge. You act like you  
6 couldn't do it the first ten years but we can do  
7 it in the next ten years.

8 Well, what's the proof? I mean, just  
9 because an engineering firm tells you that you  
10 can do it, I don't know, they may have all kinds  
11 of different problems the next ten years, the --  
12 the water treatment plant wasn't working that  
13 day and it rained that day and I got my boots  
14 stuck in the mud this day, whatever, you know.  
15 The proof is they can't do it, so my concern  
16 from that standpoint is they want to pump a  
17 hole, they can't fill it. If they can fill it,  
18 it's -- they -- they have ASR rights, they have  
19 their native rights. They don't need, you know,  
20 anything else.

21 The AMCs are not there so they have more  
22 water. They're there so they have more water  
23 rights. The water is not theirs. The water is  
24 in the ground. It is not a permit they went and  
25 got by any other means, it's not an ASR water,

1 it's just water that's in the aquifer, and they  
2 want to -- they want a right to it without going  
3 through the regular channels.

4 MS. WENDLING: Thank you, I have no  
5 further questions.

6 PRESIDING OFFICER: Mr. McLeod?

7 MR. MCLEOD: Thank you.

8  
9 CROSS-EXAMINATION

10 BY MR. MCLEOD:

11 Q. Mr. Carp, did -- did I understand you to say in  
12 your testimony that you believe that the  
13 modeling done for the City's proposal was  
14 modeling from a full aquifer to show the  
15 withdrawal of 120,000 acre-feet of credits over  
16 eight years of drought?

17 A. I believe I did. I believe I did.

18 Q. Did you read the City's proposal?

19 A. Only pieces. No, I did not for the most part.

20 Q. As between your water rights and the City's  
21 40,000 acre-feet base water rights, do you know  
22 who's senior and who's junior?

23 A. You know, the one I got there, I'm going to  
24 assume it's junior, but I don't know for sure.

25 The particular one that I put there, I -- I

1 would -- I would assume it's junior, but I don't  
2 know that for a fact. Mine.

3 Q. If -- if you're correct and your right is  
4 junior, should the City be worried that you're  
5 pumping your junior water rights in an  
6 over-appropriated area?

7 A. Only if I -- only if I impair them. Excuse me,  
8 give me just a second. Only if I impair them.

9 Q. Do you think that higher water levels are a good  
10 thing for your well?

11 A. I think they're a pain in the butt.

12 Q. So you believe that the aquifer should be drawn  
13 down to a lower level, then?

14 A. I do.

15 Q. And do you have an idea of what that lower level  
16 should be?

17 A. Oh, you know, 5, 6 feet less than we've been  
18 doing the last year or two.

19 Q. So were you present when -- when Mr. Romero of  
20 Balleau Groundwater, Inc. discussed the modeling  
21 that he had done for the Groundwater Management  
22 District?

23 A. I was there for some of it, but if you get into  
24 the specifics, I -- I may or may not have been.

25 Q. Do you remember Mr. Romero modeling pumpage down

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1 to the nine -- to the new index levels proposed  
 2 below the 1993 level?  
 3 **A. I don't remember anything specific about it.**  
 4 Q. If we could, let's have the -- the witness refer  
 5 to GMD Exhibit Number 68.  
 6 **A. I'll probably need help here, guys.**  
 7 **MS. WENDLING:** It's right in front  
 8 of you.  
 9 **A. Oh, this one here?**  
 10 **MS. WENDLING:** Yes.  
 11 **A. This whole book 68, or am I on the right page**  
 12 **here? Or has he not got us that far yet?**  
 13 **MS. WENDLING:** He hasn't told you  
 14 yet.  
 15 **A. I'm somewhat closer here. I'm somewhat closer**  
 16 **at the moment.**  
 17 **PRESIDING OFFICER:** Mr. McLeod, I  
 18 think he's ready for your question.  
 19 **BY MR. MCLEOD:**  
 20 Q. Okay. Around third-from-the-last page in that  
 21 exhibit, please refer to figure 6 and within  
 22 that figure scenario C.  
 23 **A. Okay. I don't know if I'm anywhere close to**  
 24 **where I need to be here.**  
 25 Q. You should -- you should see a page with about

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1 six graphic depictions on it with contour lines.  
 2 **A. I might be getting close here, yeah, maybe.**  
 3 **Looks like it's -- no, it doesn't have a page**  
 4 **number but ...**  
 5 Q. Near the bottom of the page, it should say water  
 6 level drawdown from scenarios A, B, and C,  
 7 figure 6.  
 8 **A. Yep, that's where I'm at.**  
 9 Q. Okay. And -- and can you tell looking at the  
 10 scenario C graphic, which shows contour lines,  
 11 on what according to Mr. Romero's modeling the  
 12 reduction in water level would be under that  
 13 pumping scenario in the location of your well,  
 14 your -- your well within the basin storage area?  
 15 **A. Well, under C, what -- what's your question**  
 16 **again about that C scenario?**  
 17 Q. Okay. Looking -- looking at the graphic lines,  
 18 the contour lines, can you tell what contour  
 19 line would be closest to your well that's within  
 20 the basin storage area?  
 21 **A. Well, I see one, two, five written here. Let's**  
 22 **see, proposed elevation limits. Wichita's EBWF,**  
 23 **what's the EBWF means?**  
 24 Q. Well, I'm thinking that would be the Equus Beds  
 25 well field.

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1 **A. Okay. So you're asking me a specific question**  
 2 **from this page, I don't think the answer is**  
 3 **there. Maybe I'm just not clear.**  
 4 Q. So I'm -- I'm asking if you can tell which of  
 5 those contour zones your -- your well would be  
 6 in?  
 7 **A. I'm going to -- I'm going to say one or two.**  
 8 **Probably -- probably one.**  
 9 Q. Okay. And do you know what those -- what those  
 10 numbers represent?  
 11 **A. No, that's kind of what I was questioning there**  
 12 **about was what do they mean.**  
 13 Q. Okay. Well, I won't go further with that  
 14 question then.  
 15 **A. Please do. I want to know.**  
 16 Q. Well, let -- let me just ask this, Mr. Carp: If  
 17 the result of Mr. Romero's modeling was that you  
 18 could expect a -- a 1- or 2-foot-level decrease  
 19 in the aquifer at your location there in the  
 20 event of the -- of the drought scenario that he  
 21 modeled if the City used its native rights and  
 22 credits over a period of eight years, would you  
 23 think that that 1- or 2-foot reduction in water  
 24 levels was unreasonable?  
 25 **A. Do I think it's unreasonable, is that what you**

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1 **asked?**  
 2 Q. Yes.  
 3 **A. I -- I do not know.**  
 4 Q. Do you think there's any chance that a 1- or  
 5 2-foot reduction in the water levels would  
 6 dewater your existing well?  
 7 **A. I think I know what you asked but ask it again.**  
 8 Q. Do you think that there's any chance that a 1-  
 9 or 2-foot reduction in water levels there in the  
 10 aquifer would dewater your existing well?  
 11 **A. No.**  
 12 Q. Mr. Carp, does -- does your water right allow  
 13 you to pump when water levels in the aquifer are  
 14 below the 1993 level?  
 15 **A. It would.**  
 16 Q. And do you think that you should have to stop  
 17 pumping at your well if the water levels went  
 18 below the 1993 level?  
 19 **A. No, I did not -- I did not sign an agreement**  
 20 **saying that I wouldn't.**  
 21 Q. So given your testimony today that you think it  
 22 would be dangerous to pump at levels people have  
 23 never pumped at before, would you stop pumping  
 24 just out of caution because of that concern?  
 25 **A. As I said, I did not sign an agreement that I**

1 **would do that in order to obtain a permit that I**  
2 **was struggling to get so I offered this in order**  
3 **that I could get my permit, I did not do that,**  
4 **City of Wichita did.**  
5 Q. Do you think that the City of Wichita should  
6 request that all pumping junior to its water  
7 rights should be shut off if the 1993 levels are  
8 reached?  
9 **A. Why would they request that?**  
10 Q. If -- if the City determined that we were being  
11 impaired by those junior rights, do you think we  
12 should request that they be shut off because now  
13 we're looking at the very dangerous 1993 levels  
14 that we've never been below before?  
15 **A. That would be their right to take that to DWR, I**  
16 **believe, but once again, I did not sign an MOU**  
17 **agreement that I would never do that.**  
18 **Hey, just a second. When I punch this, it**  
19 **does not mute and just de-mute? Don't know what**  
20 **has happened. Maybe it's going ahead and**  
21 **working but ...**  
22 Q. We can still hear you out here.  
23 **A. It seems to be working all the sudden so -- but**  
24 **I can't mute it and de-mute it.**  
25 Q. Mr. Carp, do you understand how the existing

1 Q. Do you think that there's any cap on the number  
2 of credits or the amount of credits in acre-feet  
3 that the City can accumulate in physical  
4 recharge credits under the existing permit?  
5 **A. Do I think there's any what?**  
6 Q. Any cap?  
7 **A. Cap, is that what you --**  
8 Q. Yes.  
9 **A. Now I'm going to have to have you say the**  
10 **whole -- I'm sorry, I can't get this to go. I'm**  
11 **sorry, Mr. McLeod, you're going to have to**  
12 **state -- now that I asked the middle question,**  
13 **you're going to have to state the whole question**  
14 **again, my memory's short.**  
15 Q. Okay. Let -- let me try to put it in context.  
16 You know that in the proposal there would be a  
17 120,000 acre-foot cap on all -- all credits of  
18 all types combined, right?  
19 **A. I understand that.**  
20 Q. Do you think that there is any cap currently in  
21 the existing permits on the physical recharge  
22 credits?  
23 **A. I don't know.**  
24 Q. And, Mr. Carp, you -- you seemed critical of the  
25 notion that the City would be able to put

1 physical recharge credits allowed under the  
2 existing ASR permits work?  
3 **A. Just out of my being sure, ask again.**  
4 Q. Mr. Carp, do you understand how the existing  
5 physical recharge credits that are allowed under  
6 the current ASR permits work?  
7 **A. To some extent. I do still have a question as**  
8 **to whether they're -- have been deemed junior or**  
9 **senior. I believe that that was maybe answered**  
10 **that they're senior, but I don't know for sure.**  
11 **Outside of that, I understand that they work,**  
12 **they put an acre-foot or a gallon or whatever**  
13 **into the aquifer, they put them into different**  
14 **cells, each cell has a different quantity of**  
15 **water from what they put in there. I do note --**  
16 **you know, I mean, I understand that they don't**  
17 **get 100 percent of everything that they put in**  
18 **the aquifer; I understand that if it's close to**  
19 **the river and there may be some discharge out of**  
20 **the aquifer into the river that they don't get**  
21 **as big a credit for that one as they do, say,**  
22 **one that's clear back in the middle of the**  
23 **aquifer and it's not going to flow out**  
24 **somewhere. So if that's what you mean, yes, I**  
25 **do.**

1 credits in storage and then -- then use the  
2 water, as you said, at a time when it's more  
3 valuable, as in the event of a drought. Does --  
4 do you understand that the current permits and  
5 the current physical recharge credits would  
6 allow exactly that?  
7 **A. I do, that's -- that's water that they actually**  
8 **put in there. I'm talking about the water that**  
9 **they did not put in there.**  
10 Q. And you also understand, don't you, Mr. Carp,  
11 that the aquifer never gets fuller than full?  
12 **A. That's kind of a dumb question but I guess, yes.**  
13 Q. So even though the City is putting in water for  
14 physical recharge credits -- I'll just -- I  
15 won't ask that question.  
16 **A. No, go ahead, I'd like to answer that one.**  
17 Q. What I will ask --  
18 **A. I would like to answer that one, go ahead.**  
19 Q. I'll ask you a different question instead,  
20 Mr. --  
21 **A. I like that question.**  
22 Q. And you had suggested in your direct testimony  
23 that the City's physical re -- recharge credits  
24 should only have a priority date from the date  
25 that the credit is put into the aquifer.

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1 **A. Yes.**  
 2 Q. Are you suggesting that from the moment the City  
 3 puts -- puts -- goes through everything required  
 4 in the ASR process to treat and place a gallon  
 5 of water in the aquifer that every other  
 6 existing user in the aquifer should have a prior  
 7 right to use that water the day the City puts it  
 8 in, is that what you're suggesting?  
 9 **A. Absolutely.**  
 10 Q. And, Mr. Carp, why would the City ever put a  
 11 gallon of water in the aquifer under those  
 12 terms?  
 13 **A. I don't understand myself why we ever went down**  
 14 **this road. And --**  
 15 **MR. MCLEOD:** I have no further  
 16 questions for --  
 17 **A. -- it should not have been allowed.**  
 18 **MR. MCLEOD:** I don't have further  
 19 questions for the witness.  
 20 **PRESIDING OFFICER:** Are there any  
 21 questions from DWR?  
 22 **MS. MURRAY:** Nope, there are not.  
 23 **PRESIDING OFFICER:** Any questions  
 24 from the Groundwater Management District?  
 25 **MR. STUCKY:** Yes.

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1 (Discussion held off the record.)  
 2  
 3 **CROSS-EXAMINATION**  
 4 **BY MR. STUCKY:**  
 5 Q. Mr. Carp, can you hear me?  
 6 **A. I can hear you fine.**  
 7 Q. Okay. Mr. Carp, I just want to ask a few  
 8 follow-up questions based on what you were asked  
 9 just a moment ago and also by Ms. Wendling. You  
 10 were asked some questions just a second ago  
 11 about safe yield and whether or not you should  
 12 be pumping your water right in an appropriated  
 13 area. Do you recall that question you were just  
 14 asked by Mr. McLeod, do you recall a question of  
 15 that nature?  
 16 **PRESIDING OFFICER:** We're working on  
 17 some audio issues, just a moment.  
 18 **MR. STUCKY:** Okay, I'll sit tight.  
 19 **A. Okay. Ask the question again because I didn't**  
 20 **remember being asked that specific question so**  
 21 **try again.**  
 22 **BY MR. STUCKY:**  
 23 Q. And -- and maybe I didn't hear correctly, but I  
 24 thought Mr. McLeod asked you a question about  
 25 whether or not you should be operating your

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1 water right in an over-appropriated area of the  
 2 aquifer. I thought he asked a question to that  
 3 effect. That -- that isn't ringing a bell?  
 4 **A. No, I don't think it was -- he asked me should I**  
 5 **be operating it below the '93 levels. I don't**  
 6 **remember the question of should I operate it in**  
 7 **an over-appropriated area.**  
 8 Q. Either way, when you first applied for your  
 9 water right, it would have met safe yield at the  
 10 time; is that correct?  
 11 **A. I'm assuming. The well that I have listed in**  
 12 **their deal here, I purchased that land with the**  
 13 **water right already on it.**  
 14 Q. I -- I think your -- your microphone went mute  
 15 on the second part of that answer.  
 16 **A. I would not be able to answer that -- try again.**  
 17 **I would assume that. The particular well that**  
 18 **is in the exhibit here, I purchased that land**  
 19 **with the water right already on it, so I would**  
 20 **not have been privy to the beginning.**  
 21 Q. And just for my knowledge, the water right in  
 22 question, what year was the date of priority for  
 23 that water right?  
 24 **A. Yeah, you know, you think a guy setting in this**  
 25 **chair would have that, I don't. Unless it's in**

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1 **our --**  
 2 Q. I'd ask that you turn to Exhibit 26 in the  
 3 Intervenors' notebook. Let me know when you're  
 4 there.  
 5 **A. Okay. I'm there but I'm not seeing -- or I say**  
 6 **I'm not seeing what you're looking for, I'm ...**  
 7 **MS. WENDLING:** The numbers might  
 8 have changed. So I think after  
 9 I renumbered the well records, it's 36,  
 10 Dave, if that's what you're looking for.  
 11 **MR. STUCKY:** Yes, I am looking for  
 12 the well records. In -- in the notebook I  
 13 have, the original Intervenor notebook,  
 14 it's listed as 26, so if it changed to 36,  
 15 that's -- that's my apologies.  
 16 **A. Yeah, that's it. I believe I've got in front of**  
 17 **me what you want.**  
 18 **BY MR. STUCKY:**  
 19 Q. If you were to thumb through these exhibits,  
 20 would that refresh your memory as to the  
 21 priority date of your water right?  
 22 **A. Yeah, May -- well, May 9th was the --**  
 23 Q. Just -- just to speed this up, if I were to tell  
 24 you --  
 25 **A. I believe it would be May 9th, 1988.**



1 Q. I'm sorry, that -- that's actually the date of  
2 when the appropriation was issued, but if you  
3 flip just a little further. If I were to tell  
4 you your priority date is 1979, would you have  
5 reason to disagree with that?

6 **A. Not according to this.**

7 Q. And, in fact, if I were to proffer to you that  
8 that's what that exhibit indicates, would you  
9 agree with me in that regard?

10 **A. I would.**

11 **PRESIDING OFFICER:** Pardon me,  
12 Mr. Stucky, can you give me the file number  
13 for that particular permit?

14 **A. 32678.**

15 **MR. STUCKY:** Yeah, I think Mr. Carp  
16 said it.

17 **PRESIDING OFFICER:** Thank you.

18 **BY MR. STUCKY:**

19 Q. So let me just ask you this and you can tell me  
20 this is a stupid question if you want to, but  
21 your water right predated the City's AMC  
22 proposal, correct?

23 **A. Yes. Yes.**

24 Q. And so in the sense that -- heard some feedback  
25 there. To -- to the extent that the City is

1 **A. Well, I would say some of your more sandier**  
2 **soils, poor -- let's say somewhat poorer ground,**  
3 **the value gets further apart, it's probably --**  
4 **dry land is a third or less. Third's probably a**  
5 **decent number. If you get into some better**  
6 **dryland soils, it would probably be more closer**  
7 **to half. I guess that would be my answer.**

8 Q. Okay. So if we apply that principle to your  
9 land, the land that you have your water right on  
10 and the water right being 32678, we're talking  
11 about the land that water right's on, if you  
12 were to use -- if you were to lose the use of  
13 that water right on your land, what do you think  
14 the decrease in value of your land would be?

15 **A. I believe it would be the half, it might be a**  
16 **little more, but it would probably be closer to**  
17 **the half than the third.**

18 Q. And in approximate dollars, tell me what we're  
19 talking about. You don't have to give an exact  
20 figure to the penny, to the -- to the exact  
21 dollar, but in the general sense, what kind of  
22 loss in value are we talking about here?

23 **A. It'd be 3,000, \$3500 an acre at least. Could**  
24 **be -- could be 4,000. So four -- four one**  
25 **sixty-three twenty six hundred and forty. Half**

1 taking water out of the aquifer that it didn't  
2 actually inject, that attempt would be junior to  
3 your water rights; is that true?

4 **A. Well, junior at best; water they inject is**  
5 **junior, the water credit is theft.**

6 Q. And I understand how you feel about the matter,  
7 but certainly that attempt would be a later  
8 attempt and in that sense a junior attempt,  
9 correct?

10 **A. Correct.**

11 Q. You indicated just a moment ago that the water  
12 right that you have has value. Do you recall  
13 some of that testimony?

14 **A. I do. I do.**

15 Q. And you indicated that certainly there's a  
16 difference between irrigated water rights and  
17 nonirrigated or dry land, correct?

18 **A. Correct.**

19 Q. Do you have just a general knowledge of the  
20 difference between irrigated land and  
21 nonirrigated land in your area?

22 **A. Are you speaking of value?**

23 Q. I'm speaking of value, if you can give me kind  
24 of a difference in price in what they usually  
25 sell for?

1 **a million, in excess of -- maybe a little even**  
2 **in excess of half a million.**

3 Q. So if you were to lose the water right on your  
4 land, you're -- you're testifying here today  
5 that it's possible that you could lose up to  
6 half a million dollars in -- in assets, if you  
7 will?

8 **A. Salable asset, yes. Could be more than that if**  
9 **I decided to keep it and I just couldn't**  
10 **retrieve my annual benefit from it.**

11 Q. Let me ask you this: Have you ever been  
12 approached or asked about selling any water  
13 or -- or selling any water rights?

14 **A. I have not.**

15 Q. And so your knowledge of the loss of value of  
16 your land is based on your experience with the  
17 difference between irrigated land and  
18 nonirrigated acreage, correct?

19 **A. Correct.**

20 Q. To the extent that the City's AMC proposal  
21 encroaches upon your use of water on your land,  
22 have you given the City of Wichita permission to  
23 so encroach?

24 **A. I have not.**

25 Q. And if the City of Wichita's new proposal

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1 results in essentially taking water from the  
 2 aquifer that it did not put into the aquifer, do  
 3 you believe that that's taking your water?  
 4 **A. That is a taking of the water.**  
 5 Q. And, again, are you giving the City of Wichita  
 6 permission to take your water?  
 7 **A. I am not.**  
 8 Q. And I think you already answered this for me,  
 9 but with regard to the water right on your land,  
 10 you said that you purchased that land from  
 11 someone else, correct?  
 12 **A. Correct.**  
 13 Q. And when you bought that land, I assume that you  
 14 had an expectation that you would continue to be  
 15 able to have that water right and that  
 16 investment-based expectation?  
 17 **A. Had I not, I would have bid less.**  
 18 Q. So is the answer to that yes?  
 19 **A. Sorry, yes.**  
 20 Q. And so if you are to lose that water right on  
 21 your land, you're telling me that it would  
 22 drastically impact you from an economic  
 23 standpoint; is that right?  
 24 **A. Half a million dollars is a lot to me, I don't**  
 25 **know about you.**

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1 Q. But not just that, not just the diminution in  
 2 the value of your land, but you would also lose  
 3 your ability to effectively irrigate your crops,  
 4 correct?  
 5 **A. Correct.**  
 6 Q. And so the loss to you would be really twofold,  
 7 number one, you would lose the value of your  
 8 land, number one, and then, number two, you  
 9 would lose your livelihood on your land, or that  
 10 would be greatly undermined. Is that a true  
 11 statement?  
 12 **A. Yes.**  
 13 Q. Just a moment ago, you mentioned multi-year flex  
 14 accounts. Do you recall some of that  
 15 discussion?  
 16 **A. I do.**  
 17 Q. And you had an explanation for how multi-year  
 18 flex accounts work, and what we talked about was  
 19 it was a five-year approach and you could, in  
 20 some sense, bank water for -- for use in a  
 21 future year. And that's overly simplifying the  
 22 discussion, but do you -- do you recall that?  
 23 **A. I do.**  
 24 Q. Let me ask you this: The irrigators in the  
 25 area, to the extent there was a drought and to

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1 the extent they needed to bank water, was a  
 2 multi-year flex account, was that the primary  
 3 tool or option that was offered?  
 4 **A. Sorry, I must not have listened to the first**  
 5 **part of the question, if you could go through**  
 6 **the whole thing, I apologize.**  
 7 Q. During the -- during the drought years, was the  
 8 multi-year flex account the main option or  
 9 scenario that was offered to irrigators to  
 10 effectively bank water?  
 11 **A. Somebody could tell me I'm wrong, to my**  
 12 **understanding, it kind of started then, and it**  
 13 **was available from then on. I had never really**  
 14 **known about it, give it any thought before that.**  
 15 **Perhaps it existed, but I am not aware.**  
 16 Q. Yeah, I guess my question is this: Are you  
 17 aware of another -- to the extent there's water  
 18 shortages and irrigators want to bank water over  
 19 a period of time, are you aware of an option  
 20 other than a multi-year flex account?  
 21 **A. No.**  
 22 Q. So in other words, if an irrigator wants to take  
 23 advantage of a methodology of banking water for  
 24 future years, the multi-year flex account is  
 25 probably the best option. Is that a true

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1 statement?  
 2 **A. Yes, the only option.**  
 3 Q. So let me ask you this: If the City of Wichita  
 4 is concerned about protected future water use  
 5 and how they would handle the situation during  
 6 the drought, do you believe that a multi-year  
 7 flex account is a approach the City of Wichita  
 8 should also have to explore?  
 9 **A. Are you telling me they haven't?**  
 10 Q. Well, I'm asking you to the extent they haven't,  
 11 is that something the City of Wichita should  
 12 also consider?  
 13 **A. I guess I'm surprised they haven't.**  
 14 Q. And just to answer my question, do you --  
 15 **A. Yes, yes, sorry.**  
 16 Q. And so to the extent that they haven't examined  
 17 the multi-year flex account and instead they're  
 18 trying to pump directly to the City of Wichita  
 19 and then accumulate these credits, do you feel  
 20 that the City of Wichita is thus trying to  
 21 operate under a different set of rules than the  
 22 irrigators are operating under?  
 23 **A. Yes, absolutely.**  
 24 Q. Let me ask you about some questions that were  
 25 asked -- asked regarding the mechanics of an

1 aquifer maintenance credit. And you were asked  
2 some questions about diverting water directly to  
3 town and the City getting credit for -- for that  
4 concept. Do you recall some of those questions?  
5 **A. Yes, I do.**  
6 Q. You've lived -- you mentioned that you have at  
7 least lived in the area of the aquifer for  
8 sometime now; is that right?  
9 **A. I do not live in the area, I -- we do our**  
10 **production in that area. I live close to**  
11 **Wichita.**  
12 Q. And when I say area, I mean you're within  
13 30 miles of where your wells are; is that  
14 correct?  
15 **A. Oh, more like 15.**  
16 Q. Within 15 miles of where your well is, okay. So  
17 in -- in that sense, you would know other  
18 irrigators and -- and you would know people that  
19 operate within the Equus Beds, right?  
20 **A. I do.**  
21 Q. Let me ask you this: Are you aware of any other  
22 irrigators that pump water directly out of a  
23 river to -- to irrigate? And you don't have to  
24 say names, I'm just saying in a general sense,  
25 people do that sometimes, don't they?

1 Wichita's aquifer maintenance credit proposal  
2 where they're pumping water directly to the City  
3 of Wichita and then asking -- asking for  
4 permission to then divert water out of the  
5 aquifer, how is that different?  
6 **A. Well, I'm trying to picture that you're**  
7 **saying -- your scenario was that they could get**  
8 **a credit in their secondary well because they**  
9 **were pumping water out of the river onto a**  
10 **separate property, I would say that's very**  
11 **similar.**  
12 Q. So I'm going to pause you here. Based on the  
13 similarities in those analogies, do you think  
14 the City of Wichita should get credit to pull  
15 water out of the aquifer based on diverting  
16 water directly to the City of Wichita?  
17 **A. No, their water credit there is the one that**  
18 **they have for the surface water out of the**  
19 **river. They've got their credit. Anything out**  
20 **of the aquifer is a second credit. And so --**  
21 Q. So to the extent that --  
22 **A. Sorry.**  
23 Q. My apologies. To the extent that your water  
24 right has a priority date of 1979 and is senior  
25 to the City of Wichita's attempts to divert

1 **A. Right, I'm think -- I was trying to think if I**  
2 **know anybody specifically that's doing it.**  
3 **It's -- I know there's some of them down the**  
4 **river, but it's very limited.**  
5 Q. Okay. And do you know, for example, these  
6 irrigators that pump water directly out of the  
7 river to irrigate their crops, let's -- just  
8 assume with me for a second here a hypothetical,  
9 let's say we have an irrigator and this  
10 irrigator is able to pump water directly out of  
11 the river to irrigate their crops, do you follow  
12 me so far in my scenario?  
13 **A. Yeah.**  
14 Q. And let's assume the same irrigator has another  
15 water right where they can pump groundwater.  
16 You still follow me?  
17 **A. I'm with you.**  
18 Q. To the extent that the irrigator pumps water out  
19 of the river, are they getting -- should they  
20 get a credit to pump more water out of the  
21 aquifer?  
22 **A. No.**  
23 Q. Is that something allowed under current --  
24 **A. No.**  
25 Q. So tell me the difference between the City of

1 aquifer maintenance credits, in that sense, do  
2 you feel that they would be diverting your water  
3 if they pull water out of the aquifer under this  
4 new proposal?  
5 **A. Lost you, it went -- it went quiet. I lost -- I**  
6 **lost half of that question, it went quiet.**  
7 **MR. STUCKY:** I guess I would ask if  
8 that question can be reread, was it lost to  
9 the record as well?  
10 (At this time, the reporter read  
11 the designated portion.)  
12 **BY MR. STUCKY:**  
13 Q. Would you like me to read --  
14 **A. I'm thinking. I'm thinking. I'm going to say**  
15 **in that specific question, not necessarily. I**  
16 **think they're pumping water that anyone in the**  
17 **aquifer -- how am I going to state that? I**  
18 **think they're pumping water that no one else in**  
19 **the aquifer has the right to.**  
20 Q. Let me -- let me clarify my -- my question here.  
21 I'm not sure if you thought I was talking about  
22 ASR physical recharge credits or the aquifer  
23 maintenance credits.  
24 **A. I --**  
25 Q. So let me clarify my scenario. With respect to

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1 an aquifer maintenance credit, if they divert  
 2 water directly to the City of Wichita, the City  
 3 is asking for a -- to be able to then have a  
 4 credit to take water out of the aquifer in the  
 5 future, correct?  
 6 **A. Correct. Correct.**  
 7 Q. And they didn't actually inject any water into  
 8 the aquifer; is that true?  
 9 **A. Correct.**  
 10 Q. So in that sense, under strictly --  
 11 **A. I can't -- I can't get it to go, I mean, it just**  
 12 **won't go. It kind of has a mind of its own**  
 13 **here.**  
 14 Q. So to -- so to the extent that they didn't put  
 15 water in the aquifer and then they're trying to  
 16 take water out in the future that's dedicated to  
 17 all the other users in the aquifer, to that  
 18 extent, wouldn't they be appropriating water of  
 19 other users, including yourself?  
 20 **A. I'm sorry, I'm thinking about it and I'm not**  
 21 **sure I'm getting your question.**  
 22 Q. If the City didn't put any water in the aquifer  
 23 but then they want to receive a credit to later  
 24 take water back out of the aquifer, isn't that  
 25 water that would be already dedicated to other

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1 users of the aquifer, including yourself?  
 2 **A. I -- I could go with yes on that.**  
 3 Q. And so if that's true, then, if it's already  
 4 dedicated to other water users, including  
 5 yourself, if they were to take that water out  
 6 and appropriate that water, could one argue that  
 7 it's already appropriated to you and other users  
 8 of the aquifer?  
 9 **A. In an over-appropriated situation, yes.**  
 10 Q. When you were testifying, and I just think I  
 11 missed the answer here, there was a question  
 12 that Mr. McLeod was attempting to ask you, and  
 13 you said you liked the question but then I think  
 14 he moved on and you weren't able to answer the  
 15 question. Can you repeat what that question was  
 16 and go ahead and furnish an answer for the  
 17 record?  
 18 **A. Well, he started out -- I believe he started to**  
 19 **ask me if I felt that way, then how come I**  
 20 **didn't feel that way about the ASR water, and I**  
 21 **was going to say I do. But I kind of -- I kind**  
 22 **of forgot what his question was for sure, but I**  
 23 **do remember thinking he was going to attribute**  
 24 **the same kind of question to just the ASR**  
 25 **credits, and I was going to say, well, I don't**

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1 **think District 2 should have allowed that**  
 2 **either, was my answer. But, you know, I -- I**  
 3 **kind of jumped ahead of what I thought his**  
 4 **question was, I think that's what it was, but I**  
 5 **don't know for sure because I didn't -- he**  
 6 **didn't finish.**  
 7 Q. And just a brief follow-up on something else I  
 8 asked, and I know that Mr. Basore was asked this  
 9 question, I'm not sure you were asked it  
 10 explicitly, the question was asked of Mr. Basore  
 11 if he were to leave water in the aquifer, would  
 12 he get a credit for -- for leaving water in the  
 13 aquifer, and he answered, no, that he wouldn't  
 14 receive such a credit. Do you believe that you  
 15 would receive such a credit if you decided not  
 16 to fully pump your water right?  
 17 **A. No.**  
 18 Q. And -- definitely didn't speak over you that  
 19 time, we got some feedback.  
 20 So in that sense, do you believe that if  
 21 the City of Wichita gets a credit for not  
 22 pumping out of the aquifer that you should also  
 23 then get a credit if you choose not to fully  
 24 irrigate your water right in any given year,  
 25 should you get a credit for future years as

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1 well?  
 2 **A. Well, theoretically, yes, but then the whole**  
 3 **system is blown up.**  
 4 Q. The whole system is blown up. And what do you  
 5 mean by that that the whole system is blown up,  
 6 why would that not be good for the aquifer?  
 7 **A. Well, it's a free-for-all for everybody, let's**  
 8 **go, poke holes wherever.**  
 9 Q. And so that --  
 10 **A. And that -- that would set the precedent --**  
 11 **precedent to do that statewide.**  
 12 Q. So that circles right back to the vehicle or the  
 13 methodology that was developed by the Division  
 14 of Water Resources and the legislature to -- to  
 15 envision that scenario, which was the multi-year  
 16 flex account, correct?  
 17 **A. Correct.**  
 18 Q. And the multi-year flex account allows a  
 19 accounting approach where it's banked over a  
 20 period of five years, and so you can account  
 21 and -- and to the exact gallon of water ensure  
 22 that over that five-year period essentially the  
 23 same amount of water would be used regardless;  
 24 is that right?  
 25 **A. Yes, the -- the accumulation of that five**

1 **year -- that permit over five years would never**  
 2 **be pumped past its total summation of a**  
 3 **five-year accumulation.**  
 4 Q. So let me ask you this: Let's say just  
 5 hypothetically for a moment that every irrigator  
 6 in the aquifer, to the extent they decided not  
 7 to pump their water rights, let's say every  
 8 irrigator in the aquifer was allowed to build up  
 9 a credit of 120,000 acre-feet that they could  
 10 then use in the future. You follow me?  
 11 **A. I'm with you.**  
 12 Q. What would happen to the aquifer if a whole  
 13 number of irrigators, and not just irrigators,  
 14 industrial users, other users of the water -- of  
 15 the aquifer, if they were all able to bank up  
 16 120,000 acre-feet of water and then all use them  
 17 at once during a drought, what would happen to  
 18 the aquifer?  
 19 **A. I'm thinking.**  
 20 Q. If -- if all these -- if all these, if you will,  
 21 credits --  
 22 **A. Well, here's my deal is that I -- if you do it**  
 23 **under the basis of the credits -- I -- I'm kind**  
 24 **of wanting you to re-ask your question, because**  
 25 **if you do it under the basis of the credits, the**

1 doesn't inject into the aquifer, why is the City  
 2 allowed to do that?  
 3 **A. Let's hope they're not.**  
 4 Q. In other words, do you think that would be  
 5 detrimental to the health of the aquifer; is  
 6 that true?  
 7 **A. Absolutely.**  
 8 **MR. STUCKY:** Okay. I don't have  
 9 further questions. Thank you, Mr. Carp.  
 10 **PRESIDING OFFICER:** Ms. Wendling?  
 11 **MS. WENDLING:** I don't have any  
 12 further questions.  
 13 **PRESIDING OFFICER:** Okay. Sorry, I  
 14 thought I heard some feedback there. So  
 15 your questioning is through, Mr. Carp, and  
 16 you are excused.  
 17 **A. Thanks.**  
 18 **PRESIDING OFFICER:** Ms. Wendling, do  
 19 you have further witnesses?  
 20 **MS. WENDLING:** We have no further  
 21 witnesses.  
 22 **PRESIDING OFFICER:** Okay. Then that  
 23 will conclude the presentation of the  
 24 fourth and last party's testimony, and that  
 25 will also conclude the hearing --

1 **banking system, due to the fact that people gave**  
 2 **up 10 percent of their rights and -- but they**  
 3 **can still only go --**  
 4 Q. Let me rephrase, I think -- I think I confused  
 5 you. I think I confused you.  
 6 **A. Well, yeah. Yeah, yeah, 'cause it's not --**  
 7 Q. And I apologize. I'm not talking about a  
 8 multi-year flex account right now. I'm  
 9 analogizing to the City's proposal, and in the  
 10 event that just like the City, if an irrigator  
 11 or an industrial user chose not to fully use  
 12 their water right and they were able to then  
 13 bank over a period of time, to the extent they  
 14 didn't use their water right, if they were able  
 15 to bank credits up to 120,000 acre-feet and then  
 16 an extreme drought hit and all these -- these  
 17 users of water in the aquifer then suddenly  
 18 tried to withdraw all these banked-up credits  
 19 all at once, wouldn't that be detrimental to the  
 20 health of the aquifer?  
 21 **A. I believe so.**  
 22 Q. And so then bringing us back home, why isn't the  
 23 City of -- why is the City of Wichita allowed to  
 24 accumulate all of these credits up to  
 25 120,000 acre-feet for water that it actually

1 **MR. MCLEOD:** We're not getting any  
 2 audio of the hearing officer.  
 3 (Discussion held off the record.)  
 4 **PRESIDING OFFICER:** Okay. We are  
 5 trying this from a different laptop, can  
 6 everyone hear me now? Nod if you can hear  
 7 me.  
 8 Okay. We've just concluded the  
 9 presentation of the fourth and last party's  
 10 case in these proceedings. Before I close  
 11 the hearing for today, I would like to  
 12 request the attorneys only to be a part of  
 13 a Zoom meeting to discuss further logistics  
 14 in approximately ten minutes.  
 15 Stephanie, would you please ask Ronda at  
 16 DWR to set that up and send a link.  
 17 **MS. MURRAY:** Yep.  
 18 **PRESIDING OFFICER:** The record is  
 19 not officially closed at this time,  
 20 however. We are still taking public  
 21 comments through 5:00 p.m. on February 26,  
 22 and those would be in written form, either  
 23 email or by mail to the address at DWR to  
 24 Ronda Hutton on the DWR's website for the  
 25 Wichita ASR page.

1 Before I close out these proceedings for  
 2 today, do counsel have anything to add?  
 3 Okay. Hearing none, thank you all so much  
 4 with your patience with our technology  
 5 issues, and that will end this proceeding  
 6 for today. Thank you.  
 7 (Whereupon, the proceedings were  
 8 adjourned at 12:17 p.m.)

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1 C E R T I F I C A T E  
 2 STATE OF KANSAS )  
 3 SEDGWICK COUNTY ) ss:  
 4 I, Nancy L. Rambo, a Certified Shorthand  
 5 Reporter, within and for the State of Kansas, do  
 6 hereby certify that the foregoing is a true and  
 7 correct transcript of the proceedings had at the  
 8 time and place hereinbefore set forth.  
 9 I further certify that I am not a relative  
 10 or employee or attorney or counsel of any of the  
 11 parties, nor am I a relative or employee of such  
 12 attorney or counsel, nor am I financially  
 13 interested in the action.  
 14 WITNESS my hand and official seal at  
 15 Wichita, Sedgwick County, Kansas, this 18th day of  
 16 February, 2021.  
 17  
 18  
 19 NANCY L. RAMBO, R.P.R., C.S.R.  
 20 Registered Professional Reporter  
 21 Certified Shorthand Reporter

21 Costs:  
22  
23  
24  
25



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				<p><b>3 (1)</b> 3350:21 <b>3,000 (2)</b> 3421:23;3446:23 <b>3.4 (1)</b> 3375:13 <b>30 (8)</b> 3362:5,17,24; 3363:5;3372:7; 3420:16;3421:6; 3452:13 <b>30,000 (1)</b> 3421:6 <b>300 (2)</b> 3393:23;3421:21 <b>31 (3)</b> 3379:12;3382:2; 3391:9</p>

<p><b>32 (4)</b> 3324:4;3335:13; 3336:1,2</p>	<p><b>68 (4)</b> 3335:15;3363:8; 3432:5,11</p>			
<p><b>32678 (2)</b> 3444:14;3446:10</p>	<p><b>7</b></p>			
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<p><b>3500 (2)</b> 3421:23;3422:5</p>	<p><b>75 (3)</b> 3334:18,19;3344:10</p>			
<p><b>36 (2)</b> 3443:9,14</p>	<p><b>8</b></p>			
<p><b>3-6 (1)</b> 3375:18</p>	<p><b>8 (4)</b> 3335:19,21;3350:12; 3380:10</p>			
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<p><b>38 (1)</b> 3324:12</p>	<p><b>8-and-1/8th-inch (1)</b> 3380:10</p>			
<p><b>3rd (1)</b> 3323:2</p>	<p><b>8-inch (2)</b> 3380:9,12</p>			
<p><b>4</b></p>				
<p><b>4,000 (1)</b> 3446:24</p>	<p><b>9</b></p>			
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<p><b>40,000 (7)</b> 3357:7;3397:13,14; 3413:14;3415:17; 3426:10;3430:21</p>	<p><b>9th (2)</b> 3443:22,25</p>			
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<p><b>6,000 (3)</b> 3420:21;3421:2,5</p>				
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<p><b>660 (5)</b> 3325:2,22;3339:18, 25;3340:1</p>				
<p><b>660-foot (1)</b> 3340:9</p>				

**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage*

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*Formal Hearing - Volume XIV*  
*February 5, 2021*

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1 STATE OF KANSAS  
 2 BEFORE THE DIVISION OF WATER RESOURCES  
 3 KANSAS DEPARTMENT OF AGRICULTURE  
 4  
 5 In the Matter of the City )  
 6 of Wichita's Phase II ) Case No.  
 7 Aquifer Storage and ) 18 WATER 14014  
 8 Recovery Project in Harvey )  
 9 and Sedgwick Counties, )  
 10 Kansas, )  
 11 Pursuant to K.S.A. 82a-1901  
 12 and K.A.R. 5-14-3a  
 13  
 14 FORMAL HEARING  
 15 VOLUME XIV  
 16  
 17 This matter came on via Zoom  
 18 Videoconference for Formal Hearing before  
 19 Constance C. Owen, Presiding Officer, at the  
 20 Kansas Learning Center for Health, 505 Main  
 21 Street, Halstead, Harvey County, Kansas,  
 22 commencing at 9:02 a.m., on the 5th day of  
 23 February, 2021.  
 24  
 25

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1 A P P E A R A N C E S  
 2  
 3 City of Wichita, Department of Public  
 4 Works and Utilities, appears via Zoom  
 5 Videoconference by their attorney, Brian K.  
 6 McLeod, Deputy City Attorney, 435 North Main, 13th  
 7 Floor, Wichita, Kansas 67202.  
 8  
 9 Equus Beds Groundwater Management District  
 10 No. 2 appears via Zoom Videoconference by their  
 11 attorneys, Thomas A. Adrian and David J. Stucky,  
 12 Adrian & Pankratz, 301 North Main, Suite 400,  
 13 Newton, Kansas 67114.  
 14  
 15 Division of Water Resources appears via  
 16 Zoom Videoconference by their attorney, Stephanie  
 17 Murray, Kansas Department of Agriculture, 1320  
 18 Research Park Drive, Manhattan Kansas 66502.  
 19  
 20 Intervenors appear via Zoom  
 21 Videoconference by their attorney, Tessa M.  
 22 Wendling, 1010 Chestnut Street, Halstead, Kansas  
 23 67056.  
 24  
 25

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1 INDEX OF EXAMINATION  
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 3 CITY'S REBUTTAL WITNESS  
 4  
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1 **PRESIDING OFFICER:** All right. We  
 2 are now on the record. My name is  
 3 Constance C. Owens, and I am the presiding  
 4 officer in this case. This is a  
 5 continuation of proceedings to resolve the  
 6 City of Wichita's request to modify their  
 7 aquifer storage and recovery project Phase  
 8 II permits.  
 9 Today's date is February 5th, 2021. And  
 10 I will mention that we are completely  
 11 remote. The two proceedings the two days  
 12 before today, there was an in-person  
 13 component, that is not the case today, so  
 14 everyone is appearing remotely. And we  
 15 also have a YouTube link that should be  
 16 operational so the public can listen in and  
 17 watch the proceedings as they happen. As I  
 18 mentioned, we do have our intrepid court  
 19 reporter, so there will be a transcript of  
 20 today's proceedings.  
 21 I will remind everyone there are public  
 22 comment opportunities. Written public  
 23 comments will be accepted in this matter  
 24 until 5:00 p.m. on February 26th, and those  
 25 can be submitted either by email or regular

1 mail to Ronda Hutton at the Division of  
2 Water Resources, and her contact  
3 information, her address and email address  
4 can be found on the Division of Water  
5 Resources' website. There is a special  
6 page dedicated to the Wichita ASR, and  
7 that's where that information can be found.

8 We are reconvening today so that the  
9 City of Wichita may present a rebuttal  
10 witness in this case. Before we get  
11 started, let's have appearances, please,  
12 for the City.

13 **MR. MCLEOD:** Brian McLeod, deputy  
14 city attorney for the City of Wichita,  
15 Kansas.

16 **PRESIDING OFFICER:** And for the  
17 Division of Water Resources?

18 **MS. MURRAY:** Stephanie Murray for  
19 DWR.

20 **PRESIDING OFFICER:** And for the  
21 Intervenors?

22 **MS. WENDLING:** Tessa Wendling for  
23 the Intervenors.

24 **PRESIDING OFFICER:** And for the  
25 Groundwater Management District No. 2?

1 in confining us to the contents of our  
2 expert reports, which he's had, of course,  
3 for months, if not years, and so we -- he's  
4 going to have to show you where there was  
5 surprise given to him in the testimony  
6 before he's entitled to introduce rebuttal  
7 testimony.

8 Again, it is not an absolute right; it  
9 is a right earned by -- by the showing of  
10 some surprise. And so hence we would  
11 object to his testimony, offering testimony  
12 as to our expert testimony -- as to our  
13 expert witnesses. The -- the only  
14 testimony that was -- expert testimony that  
15 was introduced in the last several days was  
16 from George Austin, and, again, I assumed  
17 that Mr. McLeod was continuing in his  
18 resolute effort to keep us -- keep that  
19 testimony, rather, confined -- confined to  
20 what was in the expert report. And so,  
21 again, he has no surprise, he -- there --  
22 there was nothing introduced there that  
23 would necessitate rebuttal testimony.  
24 The -- he indicated some consideration  
25 yesterday of dealing with the testimony

1 **MR. ADRIAN:** Tom Adrian and Dave  
2 Stucky.

3 **PRESIDING OFFICER:** Okay, thank you.  
4 And without further ado, Mr. McLeod.

5 **MR. ADRIAN:** Madam Hearing Officer,  
6 I have a preliminary matter to raise with  
7 regard to what apparently is Mr. McLeod's  
8 intention to call rebuttal testimony. And  
9 so I would object to that based upon the  
10 following. In fact, I'm old enough to  
11 remember that our current code of civil  
12 procedure, when I started practicing law,  
13 was known as the new code because it had  
14 been adopted many years before in 1964, and  
15 the whole premise of the new code was  
16 fairness and avoidance of surprise and  
17 ability to know going into a hearing or a  
18 trial what the evidence was.

19 And in this case, Mr. McLeod will have  
20 to show to you the surprise that was  
21 brought about by the testimony apparently  
22 by our expert so that he can introduce  
23 testimony to address that surprise. The --  
24 and he has been quite resolute when we were  
25 offering direct testimony from our experts

1 from the landowners, the water right  
2 holders, and therein may lie some surprise  
3 if that's what he wants to address. But I  
4 would request that he be confined to that.  
5 **PRESIDING OFFICER:** Mr. McLeod.  
6 **MR. MCLEOD:** Did we finish taking  
7 appearances before Mr. Adrian threw that  
8 out on the floor, or do we still have  
9 people who need to indicate their  
10 appearances?  
11 **PRESIDING OFFICER:** No, I had  
12 everyone.  
13 **MR. MCLEOD:** Okay. In response to  
14 that, I will just say that I -- I recall  
15 back when we were fussing over the experts'  
16 reports, the District objected to the  
17 addition of rebuttal sections to the Burns  
18 & McDonnell report, and at that time, I  
19 believe your ruling was that those  
20 additions to their reports were  
21 appropriate. As you know, I have not put  
22 their reports in the record as exhibits  
23 simply because it is cumulative if the  
24 witness is going to testify to the  
25 materials to have both, although the other



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1 parties have put in both -- both expert  
 2 reports and the testimony of the witnesses  
 3 cumulatively on basically all of their  
 4 expert testimony.  
 5 So given that this was fussed over and  
 6 you approved of the addition of the  
 7 rebuttal information in our expert reports  
 8 at the time, if we aren't allowed to  
 9 introduce the testimony, the rebuttal  
 10 testimony of our experts, we should be  
 11 allowed to put in their full reports as  
 12 exhibits so that their response to the  
 13 opposing experts is included in the record.  
 14 And the other thing that -- really the  
 15 only thing that we would propose to address  
 16 this morning that was not covered in those  
 17 rebuttal reports would be the -- the  
 18 minimum desirable streamflow information  
 19 that Mr. Austin testified to extensively  
 20 yesterday that I believe he acknowledged in  
 21 his testimony he had never actually used  
 22 the words minimum desirable streamflow or  
 23 put that analysis of impact on minimum  
 24 desirable streamflow in his report. So, in  
 25 fact, all of that was testimony that came

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1 in over the City's objection that hadn't  
 2 been in his expert report of disclosure.  
 3 So I would differ with Mr. Adrian's  
 4 contention that there was no surprise to  
 5 the City by any aspect of the experts of  
 6 the District or Intervenors going outside  
 7 the scope of their disclosure. However  
 8 resolute I may have been in attempting to  
 9 prevent that, I was not successful in the  
 10 end, and material did come in that was  
 11 outside the disclosure in Mr. Austin's  
 12 report.  
 13 **PRESIDING OFFICER:** I'm convinced by  
 14 Mr. McLeod's response, I think that if what  
 15 he intends to cover today with his rebuttal  
 16 witness addresses the minimum desirable  
 17 streamflow of Mr. Austin, which although in  
 18 concept was addressed in Mr. Austin's  
 19 expert report was not specifically labeled  
 20 and identified as such, and the fact that  
 21 the expert reports for the City are not a  
 22 matter of record, I think it's appropriate  
 23 to allow testimony to go forward today. So  
 24 I will overrule that objection. I'm sorry,  
 25 yes, overrule the objection and,

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1 Mr. McLeod, you may proceed.  
 2 **MR. ADRIAN:** Excuse me, I have two  
 3 other matters to raise, if I may.  
 4 **PRESIDING OFFICER:** Okay.  
 5 **MR. ADRIAN:** I would like to -- at  
 6 the close of the City's evidence back what  
 7 now seems like a thousand years ago, we  
 8 issued a -- or we filed a verbal motion for  
 9 what was characterized as a directed  
 10 verdict, what, if it were in a trial, would  
 11 be a directed verdict, and so I would  
 12 renew -- renew that motion at this time. I  
 13 would also renew our motion to dismiss,  
 14 which has been on file and had been taken  
 15 under advisement by you, at this time.  
 16 **PRESIDING OFFICER:** Mr. McLeod.  
 17 **MR. MCLEOD:** City continues to  
 18 oppose both of the motions.  
 19 **PRESIDING OFFICER:** I am going to  
 20 deny the first motion for what would be the  
 21 equivalent of directed verdict. My goal in  
 22 this case has always been to have as  
 23 complete a record as possible, and we've  
 24 come this far and I think we need to  
 25 complete that process.

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1 As for the motion to dismiss, the motion  
 2 to dismiss remains under advisement. So  
 3 there really is no need to renew it.  
 4 **MR. ADRIAN:** I have one  
 5 clarification. Getting back to our  
 6 conversation about the rebuttal testimony,  
 7 I understand that Mr. McLeod is confined in  
 8 his rebuttal testimony to only that of  
 9 George Austin. Is that -- is that -- is my  
 10 understanding correct on that?  
 11 **PRESIDING OFFICER:** Mr. McLeod?  
 12 **MR. MCLEOD:** Well, my understanding  
 13 from Your Honor's comments was different, I  
 14 thought you had indicated that we also  
 15 could put in the material that was covered  
 16 in the rebuttal sections of our expert  
 17 reports given that they were not of record  
 18 and there really can't be any surprise  
 19 since the District has had the rebuttal  
 20 sections provided by our experts for a  
 21 period of many, many months.  
 22 **MR. ADRIAN:** I -- I guess I'm  
 23 curious as to why you didn't deal with  
 24 that, then, during direct testimony?  
 25 **MR. STUCKY:** I -- I think if we were

1 to look at the transcript and the direct  
2 testimony both -- well, Mr. McCormick  
3 indeed did critique Mr. Romero and  
4 Mr. Austin, so our point is that these  
5 rebuttal expert reports were filed far in  
6 advance of the hearing. And per K.S.A.  
7 60-226 you can file a rebuttal expert  
8 report in response -- in response to an  
9 initial expert report, in fact you have  
10 30 days, as I recall having read the  
11 statute, and so as a consequence of that,  
12 since those rebuttal expert reports were  
13 already filed, that was fodder for the  
14 direct testimony and should have been so  
15 raised in direct testimony. And I think  
16 that's our first position here is that, if  
17 anything, it's also cumulative in the sense  
18 this has already been raised on direct.  
19 Now, alternatively, so there's two  
20 different motions we're raising, that's --  
21 that's one, is to the extent we're just  
22 talking -- talking about the initial  
23 rebuttal experts' opinions, that was fodder  
24 for direct because it was filed something  
25 like over a year ago. Alternatively, to

1 speak to some aspect of Mr. Romero's  
2 report, I believe it is incorrect to  
3 suggest that he spoke to any aspect of  
4 Mr. Austin's report. I -- I don't recall  
5 that having occurred, and if counsel can  
6 point out in the record where it occurred,  
7 I will stand corrected, but I don't think  
8 that it did occur.  
9 I think that we, in fact, at the time of  
10 closing the City's case on direct said that  
11 the City intended to reserve rebuttal as to  
12 Mr. Romero and Mr. Austin after they had  
13 testified, and that is the reason why we  
14 didn't do it in our case in direct. And at  
15 the time, the District's counsel said  
16 absolutely nothing about the City reserving  
17 the right to call rebuttal witnesses for  
18 that purpose later in rebuttal, nor did the  
19 hearing officer make any ruling saying, no,  
20 that would be precluded. In fact, I think  
21 the indication on the record was that the  
22 City's reservation of rebuttal witnesses  
23 was recognized at the time as appropriate  
24 and as something that we would be allowed  
25 an opportunity to do.

1 the extent we're talking about new opinions  
2 that are completely outside the scope of  
3 any of the original expert reports, then we  
4 have a separate motion in limine that we're  
5 going to file, that we'd like to file of  
6 record, but we don't know if that's even  
7 going to occur so we'll have to wait to see  
8 what testimony occurs. But we've had no  
9 element of preparation to know if there is  
10 even going to be new opinions that will be  
11 raised. So if there's new opinions raised,  
12 then we have a second motion that we'll be  
13 filing the moment that occurs.  
14 But our prelim -- our preliminary motion  
15 in limine is just as Tom stated that this  
16 should have been raised on direct if it's  
17 just merely talking about what was in the  
18 initial rebuttal expert report that was  
19 filed well over a year ago.  
20 **MR. MCLEOD:** I would differ with  
21 counsel and their argument in the sense  
22 that normally rebuttal occurs after the  
23 witness who's being rebutted has testified.  
24 And while I think it is correct that  
25 Mr. McCormick in his direct testimony did

1 **PRESIDING OFFICER:** It has been my  
2 understanding and my intention throughout  
3 that rebuttal testimony would be  
4 appropriate and would be allowed to the  
5 extent that it is purely rebuttal  
6 testimony. It is not intended to be  
7 another opportunity to restate what has  
8 already been testified to, it is not an  
9 opportunity to get in the last word, so to  
10 speak. It is to respond to something that  
11 a witness testified to.  
12 I understand the concept of surprise.  
13 Again, we're not tied strictly by the rules  
14 of evidence. If there is something that  
15 was testified to that rebuttal is  
16 appropriate for that was not addressed  
17 already, then I think it's -- it's fine to  
18 go forward.  
19 The objections are noted, but, again, I  
20 would point out that rebuttal needs to be  
21 limited to responding to new testimony  
22 that -- that is not simply a repeat of  
23 prior testimony by the rebuttal witness.  
24 So to that extent, I'm going to allow the  
25 testimony to continue, but if it appears

1 that we are straying back into testimony  
 2 that is not peer rebuttal, then I would  
 3 entertain objections at that point.  
 4 So, Mr. McLeod, please go ahead.  
 5 **MR. MCLEOD:** Thank you. The City  
 6 would call Mr. Paul McCormick to the stand.  
 7  
 8 PAUL ANDREW MCCORMICK,  
 9 having been first duly sworn, was  
 10 examined and testified as follows:  
 11  
 12 **DIRECT EXAMINATION**  
 13 **BY MR. MCLEOD:**  
 14 Q. Mr. McCormick, were you watching the hearing  
 15 yesterday as Mr. Austin testified?  
 16 **A. I was.**  
 17 Q. And so you -- you were present virtually for his  
 18 discussion on minimum desirable streamflow?  
 19 **A. Yeah, I was watching the YouTube feed.**  
 20 Q. Will you please refer with us to what I believe  
 21 is GMD2 Exhibit Number 68, which was  
 22 Mr. Romero's expert report and which Mr. Austin  
 23 also referred to, I believe, in his testimony  
 24 yesterday, and look at figure 4 of that report.  
 25 **A. Okay, I've got it.**

1 **Little Ark. And you can see on his figure 5,**  
 2 **the black line, it represents the streamflow,**  
 3 **the actual streamflow from the Valley Center**  
 4 **gage in the years 2011 and 2012, and then the**  
 5 **blue line is the observed flow duration curve,**  
 6 **which shows how often flow was over a given**  
 7 **value. And then the orange line, you can see**  
 8 **Mr. Romero assumed 5 cfs -- a 5 cfs reduction**  
 9 **from that -- that flow based on his numbers,**  
 10 **which is a little misleading in this case**  
 11 **because it kind of implies that every day there**  
 12 **will be 5 cfs less flow in the river caused by**  
 13 **the pumping, and that is not really accurate**  
 14 **based on these results.**  
 15 Q. How would infiltration from the river occur?  
 16 **A. Well, the -- losing and gaining from the stream**  
 17 **and infiltration is -- is driven by the river**  
 18 **stage, how high the -- the stage of the river**  
 19 **is. You know, I think somebody said yesterday,**  
 20 **made the -- the comment that water flows**  
 21 **downhill. Well, the steeper the hill and the**  
 22 **higher the hill, the faster it flows down.**  
 23 **As you can see on this figure 5, there's**  
 24 **low flow times when the graph is down low, and**  
 25 **then there's big spikes where we had a**

1 Q. Will you describe for us what that figure shows?  
 2 **A. This figure is describing the difference in the**  
 3 **model results based on the difference between**  
 4 **the proposed -- pumping to the proposed index**  
 5 **levels and pumping to the 1993 existing index**  
 6 **levels. The -- the orange or purple area there**  
 7 **is -- is the additional pumping, the blue is the**  
 8 **river depletion, and the gray is the aquifer**  
 9 **storage depletion, and there's a fine green line**  
 10 **in there, that is the evapotranspiration**  
 11 **component.**  
 12 Q. Does the figure indicate that there will be  
 13 10 cfs less flow in the Little Ark at these  
 14 pumping conditions with the proposed levels?  
 15 **A. No, it does not. It indicates that there will**  
 16 **be at approximately 10 cfs from the Ark and the**  
 17 **Little Ark. It does not differentiate between**  
 18 **how much depletion there will be from each**  
 19 **individual river.**  
 20 Q. So can we conclude from this that the river will  
 21 have 5 cfs less flow in it every day that  
 22 pumping is occurring during a drought?  
 23 **A. No, not -- not on a daily basis. If you look at**  
 24 **figure 5 of Mr. Romero's report, he assumed that**  
 25 **approximately 5 of that would be coming from the**

1 **precipitation event or a much larger flow in the**  
 2 **stream. And when -- when you have those high**  
 3 **spikes, your head driving the water into the**  
 4 **aquifer is much higher, and you're infiltrating**  
 5 **at a -- at a greater rate, much more water.**  
 6 **When it's low, you're infiltrating at a low**  
 7 **rate. So it's -- it's not that every day you'd**  
 8 **be losing 5 cfs from the river; it's on average**  
 9 **throughout the year you would lose 5 cfs. And,**  
 10 **again, that 5 cfs number is -- is an assumption;**  
 11 **we don't have a calculation of the exact value**  
 12 **of what that infiltration, additional**  
 13 **infiltration would be.**  
 14 **So MDS is -- is something that's applied on**  
 15 **a daily basis by the regulatory authorities.**  
 16 **We're talking about an average infiltration**  
 17 **across the entire period of a year. So saying**  
 18 **you're losing 5 cfs or there's an additional**  
 19 **5 cfs taken from MDS, or -- or something like**  
 20 **that, is not -- not an accurate representation**  
 21 **of how it's actually going to occur.**  
 22 Q. And recognizing that Mr. Austin attempted to  
 23 draw conclusions on impacts to minimum desirable  
 24 streamflow based on this report, in your  
 25 opinion, what conclusion can you actually reach

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1 about the impact of the pumping of  
2 alternative -- excuse me, the aquifer  
3 maintenance credits on minimum desirable  
4 streamflow in the Little Arkansas River based on  
5 Mr. Romero's report?  
6 **A. I don't believe that you can make an assumption**  
7 **regarding MDS on it. You can make the**  
8 **assumption that Mr. Romero made that -- that**  
9 **there will be an additional 5 cfs of inflow on**  
10 **average through the year, but directly --**  
11 **MR. STUCKY:** Your Honor, Your Honor,  
12 I hate to interrupt, I'm going to object  
13 and renew the motion in limine. Yesterday  
14 at the hearing when we asked what the  
15 testimony would be about today, we were  
16 told that it would be based on the rebuttal  
17 expert report that was filed by  
18 Mr. McCormick, and I don't think any of  
19 this testimony that he's raising now is in  
20 that rebuttal expert report.  
21 And, indeed, when Mr. Boese attempted to  
22 testify as to issues that were somewhat  
23 outside the scope of his expert report, the  
24 City, and I quote, said it was shameless  
25 conduct by the District, end quote, and

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1 Mr. Oleen at the time said we were trying  
2 to hide things, is what he said on the  
3 record, and you sustained that objection.  
4 And so our alternative position here is,  
5 and we've just filed a written motion  
6 in limine to this effect, is that the City  
7 has had over a year -- or not over a year,  
8 just under a year actually to supplement  
9 its expert reports, that if we're talking  
10 about testimony that was raised by  
11 Mr. Romero at the time of the initial  
12 hearing, the City of Wichita could have  
13 supplemented its expert reports and revised  
14 them. And K.S.A. 60-226 allows for that,  
15 and there's a separate section that allows  
16 for the supplementing of expert reports.  
17 And so if you look at our motion,  
18 that's -- our argument here again is that  
19 this was raised at the prior hearing that  
20 when Mr. Boese tried to deviate a little  
21 bit from his expert report, the argument of  
22 undue surprise and unfairness was raised,  
23 and so that is our alternative motion  
24 in limine that we're now raising at this  
25 point, we've just filed a written motion in

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1 limine to that effect. We were not aware  
2 that we'd be deviating from this filed  
3 rebuttal expert report as what was  
4 proffered yesterday on the record, and so  
5 now we've filed a written motion in limine  
6 to that effect that should be filed of  
7 record.  
8 **PRESIDING OFFICER:** Mr. McLeod?  
9 **MR. MCLEOD:** Yes, to respond to  
10 that, first of all, we were all present  
11 yesterday in the hearing, and to -- to  
12 correct counsel and his -- his inadvertent  
13 misstatement of the record, I believe I was  
14 very clear yesterday in saying that the  
15 rebuttal testimony today would cover  
16 matters that were in the rebuttal expert  
17 reports, and also I believe I very  
18 specifically said, and -- and counsel can  
19 go back and have the reporter read it back  
20 if he needs to to give him confidence  
21 that -- that this was said, but I do  
22 believe that I also said that Mr. McCormick  
23 would be reviewing the testimony that  
24 Mr. Romero gave on the stand and the  
25 testimony of Mr. Austin, which he was also

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1 virtually present for, and -- and look for  
2 any additional points that might not have  
3 been in the rebuttal section of his expert  
4 rebuttal report that were filed, indeed,  
5 sometime ago but have not been admitted in  
6 evidence at this point.  
7 So I think that intention was very  
8 clearly stated on the record, and I think  
9 that all of the questions we have just gone  
10 through, in fact, are less directed at  
11 Mr. Romero's work as such than Mr. Austin's  
12 attempt to misuse Mr. Romero's work  
13 yesterday in his testimony, for Mr. Austin  
14 was mistaken about the conclusions that he  
15 could draw from the information in  
16 Mr. Romero's report, and Mr. McCormick's  
17 answers so far this morning have been  
18 directed to that mistaken-ness and that  
19 misuse by Mr. Austin of Mr. Romero's report  
20 which didn't occur until yesterday when, as  
21 I said, all of Mr. Austin's testimony about  
22 minimum desirable streamflow came in over  
23 the City's objection even though it had not  
24 been included as a topic of discussion  
25 anywhere in Mr. Austin's own expert report.

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1 So I think this is, again, a case of --  
 2 of the District applying grossly double  
 3 standards, doing one thing in its own case  
 4 and then, you know, complaining and making  
 5 objections and filing motions in an effort  
 6 to suppress evidence that may be needed to  
 7 be correct misuse, which was indeed misuse  
 8 sprung on the City yesterday by surprise.  
 9 I think the motion is -- is poorly  
 10 founded, it's founded on a misstatement of  
 11 what counsel for the City said yesterday,  
 12 which can be corrected by reference to the  
 13 record, and baseless in that sense, and I  
 14 believe that the motion is baseless in its  
 15 entirety and should be overruled.  
 16 **MR. STUCKY:** And -- and I'll clarify  
 17 the record, to the extent that Mr. McLeod  
 18 is responding to what Mr. Austin said  
 19 yesterday and especially to the extent that  
 20 Mr. Austin's comments deviated to a degree  
 21 from his expert report, we would agree that  
 22 rebuttal testimony is proper to respond to  
 23 that, that the City could not have properly  
 24 prepared the District to -- to let us know  
 25 what that rebuttal would look like.

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1 But our position is that if it's a  
 2 response to Mr. Romero's testimony and the  
 3 City has had 11 months to prepare its  
 4 response to that rebuttal -- or to that  
 5 testimony of Mr. Romero, they've had  
 6 11 months to prepare that rebuttal, then  
 7 they have essentially 11 months to decide  
 8 exactly what it is they're going to say,  
 9 and without having supplemented their  
 10 expert report, which would have been  
 11 appropriate, then alternatively we have a  
 12 few minutes, maybe a few hours, maybe a  
 13 couple weeks to respond and determine  
 14 how -- how we're going to respond to what  
 15 the City is saying to Mr. Romero's report.  
 16 And so instead of 11 months, we get a very  
 17 short amount of time to then try and confer  
 18 and plan our response.  
 19 And so that's why the expert rules  
 20 require you to supplement or amend your  
 21 expert report within a certain time frame  
 22 if you're able to, and we're saying that  
 23 because Romero testified a long time ago,  
 24 the City was able to do so. But if we're  
 25 responding to what Mr. Austin said, we

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1 completely acknowledge that's a different  
 2 matter, and what Mr. McLeod said is -- is a  
 3 true statement, that if it's a response to  
 4 Mr. Austin, I think the scope of our  
 5 objections is certainly lessened.  
 6 **PRESIDING OFFICER:** So, Mr. McLeod,  
 7 with the questions that you are asking, are  
 8 you questioning Mr. Austin's use of  
 9 Mr. Romero's report, or are you questioning  
 10 in addition to that the validity of  
 11 Mr. Romero's report or testimony?  
 12 **MR. MCLEOD:** In all of the questions  
 13 that were just asked and answered, all of  
 14 those questions and the answers were  
 15 directed at Mr. Austin's use of the  
 16 information in Mr. Romero's report. That's  
 17 what they were and I'm surprised that  
 18 counsel didn't notice that before preparing  
 19 and filing his written motion.  
 20 I would also -- I would also add if  
 21 we're going to continue to have this back  
 22 and forth over rebuttal testimony this  
 23 morning, the City would be satisfied at  
 24 this point to just mark and place into  
 25 evidence the August 21st, 2019 review and

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1 rebuttal report that Mr. McCormick prepared  
 2 that was circulated to all counsel, you  
 3 know, more than a year ago. If we can just  
 4 put that in evidence, then -- then we can  
 5 do that and we can -- we can be done for  
 6 the morning.  
 7 **MR. STUCKY:** Can -- can we confer  
 8 just very briefly, Your Honor, on that  
 9 suggestion? I think it sounds like a  
 10 promising, good suggestion, but  
 11 unfortunately because of Zoom, I'm -- I'm  
 12 not in the same location as my co-counsel  
 13 and I'd really like to confer before we  
 14 agree to that.  
 15 **PRESIDING OFFICER:** That's fair. We  
 16 will go off the record briefly. And,  
 17 Mr. Stucky, I assume you can come back on  
 18 live or use the chat feature to let us know  
 19 when you're ready to reconvene.  
 20 **MR. STUCKY:** Yes, it'll -- it'll be  
 21 no more than five minutes at most so ...  
 22 **PRESIDING OFFICER:** Okay. A quick  
 23 five-minute break, thank you.  
 24 (Thereupon, a recess was taken;  
 25 whereupon, the following was had.)

1 **PRESIDING OFFICER:** Okay. Let's go  
2 back on the record. Mr. Stucky.  
3 **MR. ADRIAN:** All right. I -- I  
4 will -- this is Tom Adrian, I --  
5 **PRESIDING OFFICER:** Or, Tom.  
6 **MR. ADRIAN:** -- I'll comment on  
7 that. We've -- we've reviewed  
8 Mr. McCormick's rebuttal or evaluation  
9 dated August 21st, 2019, and we will agree  
10 with Mr. McLeod's suggestion that it be  
11 used in lieu of Mr. McCormick's testimony  
12 as to Mr. Austin, and that would be  
13 confined to the first three pages of that,  
14 I think it's a seven-page report.  
15 And we would also, in conjunction with  
16 that agreement, we would strike the  
17 testimony that Mr. McCormick has given this  
18 morning and use this -- the introduction of  
19 those three pages in lieu of any rebuttal  
20 testimony. And should -- should he want to  
21 keep that testimony that Mr. McCormick has  
22 given this morning, then we would want the  
23 right to cross-examine him as to the  
24 testimony that he's given thus far.  
25 **PRESIDING OFFICER:** Mr. McLeod?

1 But since the City's -- the City's view is  
2 that we should be able to put on anything  
3 that's recovered -- that's actually been  
4 covered in these rebuttal expert reports  
5 since August of last -- of two years ago  
6 actually, plus the line of questioning that  
7 we just covered with Mr. McCormick, we  
8 believe was -- was completely and totally  
9 permissible and, in fact, it's in the  
10 record and should remain in the record; and  
11 if -- if they want to cross Mr. McCormick  
12 about it, that's their right.  
13 But, you know, I believe the City, as to  
14 the content of these rebuttal reports, we  
15 either should be able to put our reports in  
16 in whole like everybody else has done, and  
17 they've had them for over two years, right,  
18 so there's -- there's no possible surprise,  
19 or we should be able to have Mr. McCormick  
20 testify to the content of these rebuttal  
21 reports, which our intent to have him do  
22 that is the only reason that we didn't  
23 offer his rebuttal report full text as an  
24 exhibit for admission in evidence in the  
25 case already.

1 **MR. MCLEOD:** As a counter, that --  
2 that just fails in any form of adequacy, so  
3 please go ahead and rule on their motion  
4 and we'll struggle through this -- this  
5 gamut of harassment however we have to for  
6 the remaining hours of today's hearing.  
7 **MR. ADRIAN:** I'm sorry the rules are  
8 harassing you, but they are the rules.  
9 **PRESIDING OFFICER:** And so,  
10 Mr. McLeod, I'm sorry, it was just a little  
11 hard to hear you, so you -- you do not wish  
12 to reach the agreement that Mr. Adrian  
13 suggested?  
14 **MR. MCLEOD:** We don't.  
15 **PRESIDING OFFICER:** So I believe  
16 where things stand, Mr. McLeod, is for  
17 Mr. McCormick's continued testimony to --  
18 for today to be limited to responding to  
19 Mr. Austin or perhaps to other witnesses  
20 that we heard yesterday. Is that your  
21 understanding?  
22 **MR. MCLEOD:** I -- I actually haven't  
23 seen the written motion in limine that's  
24 been referred to, so I -- I -- I couldn't  
25 actually tell you what the motion is for.

1 **MR. STUCKY:** And I guess maybe a  
2 point of clarification is helpful. If we  
3 agree just to admit this rebuttal expert  
4 report, does -- does that end the matter,  
5 does that preclude our right to  
6 cross-examination, I guess that wasn't  
7 clarified maybe for us as far as what that  
8 means? So I guess a clarification on that  
9 would -- would be helpful as well, and then  
10 maybe -- maybe, I can't speak for our group  
11 but maybe we could just agree to admit the  
12 entire report if it doesn't preclude  
13 cross-examination or at least brief  
14 cross-examination on those limited points.  
15 **MR. MCLEOD:** The City's intent would  
16 be fully to allow that cross-examination to  
17 occur. Just as if we asked the witness all  
18 these questions and he answered them all as  
19 they are in the report, you would be able  
20 to cross him -- you would be able to cross  
21 him to that same extent.  
22 **PRESIDING OFFICER:** So do I  
23 understand that the two of you are in  
24 agreement, and tell me if I'm wrong -- and  
25 I should note I have also not seen the

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1 written motion in limine so I -- I am  
 2 unable to address that specifically. But  
 3 do I understand that -- that you are in  
 4 agreement that we admit the report dated  
 5 August 21, 2019 and allow subsequent  
 6 cross-examination of Mr. McCormick, then  
 7 that would substitute for his testimony  
 8 today?  
 9 **MR. MCLEOD:** That would substitute  
 10 for further testimony today, but we would  
 11 keep and it would also be subject to cross  
 12 the six or so questions that were asked and  
 13 answered of him today.  
 14 **MR. STUCKY:** Yeah, I -- I don't mean  
 15 to confer with my counsel on the record,  
 16 but I think that if -- if Mr. McLeod wants  
 17 to introduce this supplemental expert  
 18 report in lieu of further testimony by  
 19 Mr. McCormick and we're allowed to have at  
 20 least a very limited cross as to the points  
 21 strictly raised in the supplemental expert  
 22 report, I think that's -- we would allow  
 23 the report in its entirety, but I -- I  
 24 would have to -- I guess Mr. Adrian can  
 25 confirm that for the record since we didn't

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1 have a chance to confer on that point.  
 2 But, yes, if we're allowed to cross-examine  
 3 based on the limited points in this -- in  
 4 this report, then I think we're fine with  
 5 the report being admitted in its entirety.  
 6 **MR. ADRIAN:** I -- I would agree with  
 7 that, and, Tessa, would you agree or  
 8 disagree with that?  
 9 **MS. WENDLING:** I would agree with  
 10 that. My understanding is that we're  
 11 admitting the supplemental expert report in  
 12 lieu of further direct testimony today,  
 13 just making sure I understand correctly?  
 14 **MR. MCLEOD:** That would be my  
 15 understanding as well. And all of it, both  
 16 the testimony that Mr. McCormick has given  
 17 thus far today and what is in the content  
 18 of his rebuttal report of 21 August 2019  
 19 will be open and subject for cross.  
 20 **PRESIDING OFFICER:** And, Mr. Stucky,  
 21 are you in agreement that the testimony  
 22 already given today remains on the record  
 23 and is subject to cross-examination?  
 24 **MR. STUCKY:** Yes, it's subject to  
 25 both cross-examination, and Mr. Romero, who

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1 I believe is on this Zoom link, it's also  
 2 subject to his rebuttal testimony as well  
 3 since it's now part of the record.  
 4 **PRESIDING OFFICER:** Okay. I -- I  
 5 assume that counsel for the Intervenor and  
 6 counsel for DWR do not object to this  
 7 agreement? Would either one of -- would  
 8 you like to let me know where you stand on  
 9 that?  
 10 **MS. MURRAY:** I -- I do not object.  
 11 Sorry.  
 12 **PRESIDING OFFICER:** And,  
 13 Ms. Wendling, I did not hear from you?  
 14 **MS. WENDLING:** I have no objection.  
 15 **PRESIDING OFFICER:** It sounds like  
 16 that agreement is reasonable, and,  
 17 Mr. Stucky, does that render your written  
 18 motion in limine, which I have not seen,  
 19 does it render that moot?  
 20 **MR. STUCKY:** We'll -- we'll withdraw  
 21 our objection as to merely admitting the  
 22 supplemental expert report. Again, our  
 23 argument was it still should have been  
 24 raised on -- on direct since it was filed  
 25 in -- in response to our initial expert

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1 reports, but we'll withdraw it as part of  
 2 this agreement.  
 3 **PRESIDING OFFICER:** Okay, thank you.  
 4 So that is what we will agree to going  
 5 forward. I'm going to reiterate it for the  
 6 record, please, Counsel, correct me if I am  
 7 mistaken, but in lieu of further testimony  
 8 from Mr. McCormick, I will admit in its  
 9 entirety his report dated August 21, 2019,  
 10 and that will be open to cross-examination  
 11 in the future. The testimony Mr. McCormick  
 12 has already given today will remain on the  
 13 record, and it will also be open to future  
 14 cross-examination. Have I left anything  
 15 out?  
 16 **MR. MCLEOD:** That sounds almost  
 17 entirely correct, Your Honor, and let's  
 18 just -- let's give it whatever City exhibit  
 19 designation we're ready for in the line of  
 20 numbering.  
 21 **PRESIDING OFFICER:** Okay. What  
 22 would be the next City exhibit number?  
 23 **MR. MCLEOD:** I'm thinking maybe 29.  
 24 The reporter may know better than I do at  
 25 this point.

1 **PRESIDING OFFICER:** Nancy, can you  
2 run that down for us?  
3 **THE REPORTER:** I can. Do you want  
4 me to do that now, or do you want me to  
5 just put the next number on it?  
6 **PRESIDING OFFICER:** Well, just -- we  
7 just need to have it designated what the  
8 next number is, we're not sure what that  
9 number is.  
10 **THE REPORTER:** Okay. You need to  
11 give me a minute then.  
12 **PRESIDING OFFICER:** Thank you.  
13 **THE REPORTER:** I believe Brian is  
14 correct, it is Exhibit 29.  
15 **PRESIDING OFFICER:** Okay. So  
16 Exhibit 29 is admitted pursuant to  
17 agreement among counsel.  
18 **MR. MCLEOD:** And Mr. McCormick is  
19 open for cross.  
20 **PRESIDING OFFICER:** Mr. Stucky, are  
21 you prepared to proceed with that?  
22 **MR. STUCKY:** Yes, we're prepared to  
23 proceed with our cross-examination, but I  
24 think Ms. Murray was going to go next.  
25 **PRESIDING OFFICER:** Okay.

1 sorry to interrupt, but I would like to  
2 locate where Mr. McCormick's report is in  
3 the exhibit notebooks, can someone point me  
4 to that?  
5 **MR. MCLEOD:** I think it may actually  
6 need to be downloaded from the ASR website  
7 that DWR maintains. It was -- it was  
8 posted, I believe, on the website but has  
9 not been in the exhibit book.  
10 **PRESIDING OFFICER:** Okay. Thank  
11 you. You may go ahead.  
12 **MR. STUCKY:** So I am -- I'm fine, we  
13 can -- we can scan it and we can email it  
14 to all the parties very quickly if that  
15 would be beneficial to -- to everyone here  
16 so we know what we're talking about. I  
17 have a copy in front of me that I printed  
18 off in preparation for today, actually  
19 printed it off last night and prepared last  
20 night, but if everyone would like us to  
21 email it so it's -- so we all have the same  
22 thing in front of us, we can quickly do  
23 that, it would just take a three -- a  
24 three-minute recess if that would be  
25 helpful to Madam Hearing Officer.

1 Ms. Murray, are you prepared to proceed  
2 with that?  
3 **MS. MURRAY:** I don't have any  
4 questions for Mr. McCormick.  
5 **PRESIDING OFFICER:** Okay.  
6 Mr. Stucky.  
7 **MR. STUCKY:** Thank you, Your Honor.  
8  
9 **CROSS-EXAMINATION**  
10 **BY MR. STUCKY:**  
11 Q. Good morning, Mr. McCormick.  
12 **A. Good morning, Mr. Stucky.**  
13 Q. It's been awhile since we -- we visited about  
14 this matter. I just have a few follow-up  
15 questions, and I promise it won't be near as  
16 long as the last time we visited about this  
17 matter. There's just a few points in your  
18 supplemental expert report that I'd ask for your  
19 clarification on, so I'll try and run through  
20 them in order and be fair -- fairly specific and  
21 confined in my testimony -- or in my questions,  
22 so you can also be confined in your testimony as  
23 well in that regard and speed this process up.  
24 But at any rate --  
25 **PRESIDING OFFICER:** Mr. Stucky, I'm

1 **PRESIDING OFFICER:** At the risk of  
2 yet another three-minute delay, that would  
3 be very helpful to me, so I would  
4 appreciate that, thank you.  
5 **MR. STUCKY:** Okay. We'll -- we'll  
6 have it e-mailed, scanned and e-mailed out  
7 to the group within three or four minutes.  
8 **PRESIDING OFFICER:** Okay. So we  
9 will go off the record for a few minutes  
10 while that's being done.  
11 (Thereupon, a recess was taken;  
12 whereupon, the following was had.)  
13 **MR. STUCKY:** We're already back on  
14 the record, and I'm sorry it's been so --  
15 or I'm sorry if we're still off the record,  
16 I just want to clarify our position here,  
17 it's been so long since I've looked at some  
18 of this stuff. I used to know it inside  
19 out, but in Volume V, Exhibit 70, we have  
20 the City's rebuttal expert reports in our  
21 notebooks that we prepared. I don't think  
22 it's in the City's notebooks, but it's  
23 actually in the District's notebooks,  
24 Volume IV (sic), Exhibit 70.  
25 **MR. MCLEOD:** I would have to say



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1 that got past me as well.  
 2 **PRESIDING OFFICER:** Okay. I was  
 3 able to locate that. Does anyone else need  
 4 a little time to receive that from  
 5 Mr. Stucky? Okay. Hearing none,  
 6 Mr. Stucky, please go ahead.  
 7 **MR. STUCKY:** Thank you, Your Honor.  
 8 **BY MR. STUCKY:**  
 9 Q. Mr. McCormick, I'd ask that you turn to the  
 10 first page of your report, and I'll just ask you  
 11 a few questions about some of the conclusions  
 12 that you've raised in this report. In the very  
 13 first one, you're responding to a comment that  
 14 was apparently made by Mr. Austin on page 4 of  
 15 his expert report in his conclusions, and  
 16 Mr. Austin apparently had talked about issues  
 17 with the MODFLOW model and the fact that it  
 18 could not look at individual impacts of wells  
 19 with any certainty. You responded to that in --  
 20 with several sentences. I'd ask that you read  
 21 in -- in the last full paragraph on that first  
 22 page of your supplemental expert report, I'd ask  
 23 that you read that last sentence where it starts  
 24 with the model accurately reproduces, if you  
 25 could read that for the record?

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1 **A. Just a moment, I'm trying to find the right**  
 2 **page, Mr. Stucky. My internet connection is a**  
 3 **little slow, I'm looking at it from the DWR web**  
 4 **page to make sure I have the latest copy of the**  
 5 **exhibit.**  
 6 Q. Yeah, and to -- and to clarify the record, what  
 7 I'm looking at, Mr. McCormick, is your  
 8 supplemental expert report. At the top of the  
 9 exhibit I'm looking at, it says Burns &  
 10 McDonnell, it's dated August 21st, 2019, and  
 11 it's a letter to Brian McLeod, and I'm looking  
 12 at that page, at the bottom of that page.  
 13 **A. All right. I'm at the August 21st, 2019 to**  
 14 **Brian McLeod, and the bottom of that page, you**  
 15 **asked me to read the last sentence, the model**  
 16 **accurately reproduces annual water levels**  
 17 **measured in the basin storage area and,**  
 18 **therefore, can be relied upon to predict water**  
 19 **level impacts at specific locations. Is that**  
 20 **correctly what you wanted read, sir?**  
 21 Q. That is, thank you. Can you clarify to me  
 22 exactly how the model accounts for water levels  
 23 measured in specific locations?  
 24 **A. The model can be used to accurately measure**  
 25 **water levels in specific locations within that**

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1 **4-by-400-foot grid, and there are numerous tools**  
 2 **that can be used with the MODFLOW model to**  
 3 **interpolate specific location water levels.**  
 4 Q. And just to clarify, although there's additional  
 5 tools that could be used, Burns & McDonnell did  
 6 not look at individual well locations, per se,  
 7 other than this 400-by-400-foot-square grid,  
 8 just to clarify I think what you told us earlier  
 9 on the record, correct?  
 10 **A. We looked at the individual -- the actual**  
 11 **locations and pumping values for wells in their**  
 12 **actual geographic location. We did not attempt**  
 13 **to evaluate individual drawdown impacts on**  
 14 **surrounding wells within the model. There were**  
 15 **a number of unknowns in that, and, no, we did**  
 16 **not go to that resolution of -- of detail.**  
 17 Q. Thank you, Mr. McCormick. And to move this  
 18 along, if you could move to the second page of  
 19 this supplemental expert report, again, it  
 20 appears that Mr. Austin talks about how during  
 21 the years from 1935 to 1979 the model was  
 22 looking at one-mile-by-one-mile grids, but then  
 23 after 1980, the model was able to take into  
 24 account 400-foot-by-400-foot boxes, if you will.  
 25 Is that an accurate statement of -- of part of

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1 what Mr. Austin is saying starting on the bottom  
 2 of that first page and moving on into that  
 3 second page, is that just in a nutshell part of  
 4 what he's saying?  
 5 **A. I think it's a misinterpretation of exactly what**  
 6 **was done. The model used a 400-by-400 grid, but**  
 7 **the pumping from 1935 to 1979 was aggregated for**  
 8 **one-mile areas. So it's not that the grid or**  
 9 **anything of the model in the earlier years**  
 10 **was -- was larger; it's simply that the pumping**  
 11 **was not taken as a refined level during those**  
 12 **earlier years.**  
 13 Q. Okay. That -- that clarifies. And, in fact,  
 14 if I were to quote you in the second line of  
 15 your response, you said that the  
 16 one-mile-by-one-mile-square area was, quote, a  
 17 standard methodology, end quote, at that time  
 18 period; is that correct?  
 19 **A. Yes, it is a standard methodology that's used**  
 20 **even today. We were just looking at a model for**  
 21 **GMD3 that currently aggregates -- using -- using**  
 22 **modern data, they're still aggregating the data**  
 23 **to one-mile-by-one-mile squares.**  
 24 Q. If you would, to focus us in on something I  
 25 think you mentioned just a moment ago, could you

1 read the second-to-last sentence of that first  
2 full paragraph on that second page? It's a  
3 sentence that starts if greater than 400 foot,  
4 could you --  
5 **A. Sure.**  
6 Q. -- read that for the record?  
7 **A. Yes, if greater than 400-foot resolution is**  
8 **desired, there are numerous post-processing**  
9 **tools available for use with MODFLOW that allow**  
10 **accurate water level interpo -- excuse me,**  
11 **interpolation within each individual grid cell.**  
12 Q. So in other words, if one desired to have more  
13 specificity and look at a more narrow area, if  
14 you will, again, I -- I understand that my  
15 terminology is not as precise or scientific as  
16 what you'd use, but in -- in my simple mind if  
17 we were to look at a more narrow area than  
18 400 foot by 400 foot, you're saying that there  
19 are post-processing tools available that could  
20 accomplish that if -- if one chose; is that  
21 right?  
22 **A. Yes, there are.**  
23 Q. And I think that by extension, and you've  
24 already answered this, is that those  
25 post-processing tools weren't engaged or

1 **irrigator could change it next week and then all**  
2 **of that data would have to be reevaluated. So I**  
3 **think there would be a very limited value to**  
4 **evaluating on a well-by-well basis throughout**  
5 **the entire well field.**  
6 Q. Okay. That actually leads me to another thought  
7 or another question. Just to refresh my memory  
8 and -- and remind everyone on the record as far  
9 as things we talked about sometime ago, isn't it  
10 true that when we're considering this data,  
11 we're looking at this data on an annual basis?  
12 And so in other words, it still wouldn't show  
13 what would occur during peak pumping periods and  
14 the impacts to individual wells during those  
15 peak pumping times; is that correct? As far as  
16 what --  
17 **A. That's correct. That is correct, the -- the**  
18 **model is on annual time steps, and the index**  
19 **levels are applied annually, so the resolution**  
20 **and the data that is provided within the model**  
21 **is adequate and sufficient for evaluating the**  
22 **index levels.**  
23 Q. Okay. Let's go ahead and move along to the next  
24 page of your report, page 3.  
25 **A. All right.**

1 considered by Burns & McDonnell, at least when  
2 doing the modeling in -- in this particular  
3 case; is that right?  
4 **A. We did not do that because the -- we didn't have**  
5 **all of the data that would apply to it, all of**  
6 **the depths of the domestic wells and the**  
7 **screened intervals of them and even of the**  
8 **irrigation wells. And, you know, what their**  
9 **pump settings are, those are things that change**  
10 **and -- well, excuse me, the pump settings can**  
11 **change, you don't usually move a well once it's**  
12 **drilled, but we -- we didn't have that**  
13 **information and didn't go to that level of**  
14 **detail for our evaluation.**  
15 Q. If the District were to help furnish that  
16 additional data to Burns & McDonnell, do you  
17 think that those -- that additional  
18 post-processing analysis would be helpful as --  
19 as further research or further work on this --  
20 on this matter?  
21 **A. I would not say that it would add significant**  
22 **value because, again, there are so many unknowns**  
23 **and conditions that change throughout the year,**  
24 **you know, that GMD could provide me a pump**  
25 **setting today for a well and for some reason an**

1 Q. And just -- and while you're looking for that,  
2 just so I'm clear, because pump settings can  
3 change, can one do the analysis based on well  
4 depth which does not change, could you do that  
5 further analysis that you just mentioned?  
6 **A. We could.**  
7 Q. So, anyway, moving on, then, to page 3 of -- of  
8 your supplemental expert report, if -- if you  
9 look at your conclusions at the bottom, there's  
10 a statement that's made about water quality  
11 apparently by Mr. Austin, it looks like was made  
12 in his expert report, and then there's a  
13 response that you -- you give at that last full  
14 paragraph on the bottom of page 3. Do you  
15 follow me where -- where I am reading?  
16 **A. Yes, sir.**  
17 Q. And apparently Mr. Austin, and I think he said  
18 something obviously about it on the record  
19 yesterday about water quality, and I assume that  
20 you were able to listen to that testimony  
21 yesterday as well. But, anyway, there's --  
22 there's a statement that he -- he made about the  
23 movement of the chloride plume, and you provide  
24 a response, and it looks like your response was  
25 that Mr. Austin should have examined this

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1 particular study by Klager, Kelly, and Ziegler  
 2 about chloride movement. In essence, I believe  
 3 that was the first part of your response; is  
 4 that right?  
 5 **A. Yes, reading my response, that mentions that**  
 6 **report, which I believe has been introduced into**  
 7 **the record and has been referred to numerous**  
 8 **times during testimony.**  
 9 Q. And do you know off the top of your head,  
 10 just -- just to refresh my memory, what the date  
 11 of that report was?  
 12 **A. I believe that the date of that report is -- or**  
 13 **the number of the -- that report is 2016-5165; I**  
 14 **may be inaccurate there.**  
 15 Q. Well, let me just ask --  
 16 **A. But that would indicate that that report was**  
 17 **published in 2016.**  
 18 Q. Okay. Then I'll just ask a simple question  
 19 without having to be precise on the date. That  
 20 report was indeed published prior to the City's  
 21 proposal with respect to aquifer maintenance  
 22 credits, correct?  
 23 **A. Yes.**  
 24 Q. And, in fact, that report was filed prior to the  
 25 City proposing to lower the minimum index level,

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1 correct?  
 2 **A. Yes.**  
 3 Q. And, in fact, that report appears to look at  
 4 movement of chloride between 1990 through 2008;  
 5 is that also correct?  
 6 **A. That's what the title says, yes.**  
 7 Q. I would ask that you read that next sentence,  
 8 which is a conclusion in the report starting  
 9 with additionally, if you could read that for  
 10 the record?  
 11 **A. Sure. Additionally, the results of modeling**  
 12 **these scenarios indicate that eastward movement**  
 13 **of the Burrton plume could be slowed by the**  
 14 **additional artificial recharge at the Phase I**  
 15 **sites and that decreasing pumping along the**  
 16 **Arkansas River or increasing water levels could**  
 17 **retard the movement of chloride and may prevent**  
 18 **further encroachment into the southern part of**  
 19 **the well field area.**  
 20 Q. So just to break this down a little bit, it  
 21 refers to the fact that this study or this  
 22 report is about Phase I sites, is that right,  
 23 that's what it says verbatim, correct, from what  
 24 you quoted?  
 25 **A. It -- it talks about Phase I sites, but it's not**

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1 **referring only to Phase I sites, no.**  
 2 Q. But just to clarify today's record, what we're  
 3 talking about with aquifer maintenance credits  
 4 and the City's current proposal, that has to do  
 5 with an extension of Phase II, we're not talking  
 6 about Phase I credits, at least with the issues  
 7 before the hearing officer today; is that right?  
 8 **A. I believe that the proposal states that Phase I**  
 9 **wells are excluded, so it would only deal with**  
 10 **Phase II.**  
 11 Q. Okay, thank you, that -- that's helpful. But I  
 12 think without beating a dead horse, I think the  
 13 point is clear that this report that talks about  
 14 the movement of chloride and the potential  
 15 harmful impacts of that movement doesn't  
 16 consider what would occur in the event the  
 17 minimum index level was lowered and the City  
 18 were to utilize this aquifer maintenance credit  
 19 approach, correct?  
 20 **A. I would agree that it does not deal with the**  
 21 **aquifer maintenance credits, and I would have to**  
 22 **review the report to remember exactly what**  
 23 **scenarios they modeled, but I -- I know they did**  
 24 **model levels with lower water levels in the well**  
 25 **field area. So they did consider lowered water**

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1 **levels.**  
 2 Q. Okay. And we -- we may wish to clarify that  
 3 point later, but for now I'll just move along.  
 4 Let's go ahead and move on to the next page of  
 5 your supplemental expert report, page 4.  
 6 **A. Okay, I'm there.**  
 7 Q. Toward the bottom of -- of the supplemental  
 8 expert report you have what's called point 3; is  
 9 that right?  
 10 **A. Yes.**  
 11 Q. And I'm going to quote the last sentence of -- I  
 12 think these would be Mr. Romero's conclusions,  
 13 I'm going to quote the last sentence of  
 14 Mr. Romero's conclusions because I think that's  
 15 what's helpful for the record, Mr. Romero says,  
 16 however, Burns & McDonnell does not present an  
 17 analysis quantifying hydrologic effects from  
 18 pumping that could cause drawdown to that  
 19 proposed minimum index level. And then could  
 20 you read also your response for the record, it's  
 21 just one sentence?  
 22 **A. The proposed minimum index levels were developed**  
 23 **by taking the modeled lowest groundwater levels**  
 24 **and adding a contingency, as described in**  
 25 **section 2 of the proposal.**

1 Q. So in other words, Mr. Romero's last statement  
2 that this -- this analysis was not presented,  
3 essentially you're acknowledging that that  
4 analysis was not specifically done but instead a  
5 contingency was added; is that correct?

6 **A. No, that's not correct. I was merely explaining**  
7 **in my response how the groundwater levels were**  
8 **done -- or, excuse me, were developed. And I**  
9 **believe based on that comment, Mr. Romero is**  
10 **providing a critique that he could -- that he**  
11 **recommends a -- a different way of quantifying**  
12 **the hydrologic effects.**

13 Q. Did you personally quantify or study the  
14 hydrologic effect of lowering to the new minimum  
15 index level, did you personally help with that  
16 work?

17 **A. Yes, I did.**

18 Q. And -- and where in your proposal does it  
19 demonstrate that that modeling occurred to the  
20 new proposed minimum index level?

21 **A. Well, I think it comes down to there's --**  
22 **there's multiple ways to skin a cat. We**  
23 **developed those levels through -- through the**  
24 **method that we used; Mr. Romero is simply saying**  
25 **that he would look at it in a different way.**

1 **saying he approached it from a different angle.**  
2 **If you have a specific question -- or a quick**  
3 **question about one of his analyses, I can say**  
4 **whether I agree or disagree with that, but I'm**  
5 **not prepared to make a blanket statement that I**  
6 **agree with everything that Mr. Romero said.**

7 Q. I think we're -- we're essentially saying the  
8 same thing, and so I'll move onto the next page.

9 Moving onto the next page of -- of the  
10 report, and it's point 4, I guess it starts on  
11 the fourth page and it continues into the fifth  
12 page of Mr. Romero's report, Mr. Romero talks  
13 about point 4, and he says, the assessment  
14 provides insight to hydrologic effects in the  
15 context of the new pumping that could occur if  
16 the minimum index levels are lowered, and he  
17 talks about some of his analysis in that regard,  
18 and you then have a response. I would ask that  
19 you read for the record the second sentence of  
20 your response.

21 **A. All right. As such, is that the one you're**  
22 **talking about that starts as such?**

23 Q. I'm sorry, I'm on the top of page 5 of your  
24 expert report, I'm talking about point --  
25 point 4, which started on the bottom of page 4

1 Q. And -- and just to clarify the record, in your  
2 proposal, you just -- you showed some drought  
3 pumping, but you didn't do the same modeling or  
4 quantifying of hydrologic effects that  
5 Mr. Romero did in his study. Is that a true  
6 statement?

7 **A. Yes, he -- he did a different type of**  
8 **quantification than we did and went about it in**  
9 **a different way, and I believe he reached pretty**  
10 **much very similar conclusions that we did.**

11 Q. And so in other words, you didn't have reason to  
12 disagree with Mr. Romero's conclusions in that  
13 regard; is that correct?

14 **A. I'm not saying I didn't disagree with any**  
15 **particular point of Mr. Romero's; I'm simply**  
16 **saying Mr. Romero went with a different method**  
17 **of quantifying, which is likely also valid.**

18 Q. Right. And that's -- and that's what I was  
19 speaking to, that specific level of calculations  
20 that Mr. Romero did, those specific calculations  
21 that we're discussing right now, you didn't have  
22 reason to disagree with, you -- you saw it as  
23 valid, correct?

24 **A. I'm not saying that anything that Mr. Romero did**  
25 **is not valid in this statement. I'm simply**

1 but then it continues onto the top of page 5 and  
2 so I'm looking at the first full paragraph on  
3 page 5, the second sentence of -- yeah, the  
4 second and third sentence, if you could read  
5 both those sentences actually, that would be  
6 awesome.

7 **A. Okay. As such, the City can pump 40,000**  
8 **acre-feet per year regardless of where water**  
9 **levels are with respect to the minimum index**  
10 **levels. It should be clarified that changing to**  
11 **the proposed minimum index levels only**  
12 **facilitates diversion of recharge credits, which**  
13 **is groundwater that would otherwise not exist in**  
14 **aquifer storage without ASR operations.**

15 Q. So in other words, what you're talking about  
16 here is the concept of artificial recharge, is  
17 that right, because you're talking about water  
18 that would otherwise not exist in the aquifer?  
19 Is that -- is that right?

20 **A. I think what I'm talking about is that the index**  
21 **levels, whether 1993 or proposed, only apply to**  
22 **pumping recharge credits, they don't apply to**  
23 **pumping the City's native right.**

24 Q. I'm referring to the second part of that  
25 sentence where it says, which is groundwater

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1 that would otherwise not exist in aquifer  
 2 storage without ASR operations, and when you're  
 3 referring to ASR operations, at least as it's  
 4 used in that sentence, are you talking about  
 5 physical recharge as found in ASR Phase II?  
 6 **A. The index levels, based on the proposals, would**  
 7 **apply to AMCs or physical recharge.**  
 8 Q. And, again, I am not sure I want to revisit this  
 9 entire consideration or debate we had, but  
 10 how -- how does water that would otherwise not  
 11 exist in the aquifer, how does it get placed in  
 12 the aquifer based on an aquifer maintenance  
 13 credit?  
 14 **A. Based on an aquifer maintenance credit, the**  
 15 **water is diverted from the Little Ark River,**  
 16 **treated through a treatment system. If it is a**  
 17 **physical recharge credit, it is put into the**  
 18 **ground and left there for some period of time**  
 19 **and then pumped back out and sent somewhere for**  
 20 **use. If it is an AMC, we are credited with**  
 21 **leaving the water in the ground and it is sent**  
 22 **directly for use.**  
 23 Q. And just to clarify, though, let's say that we  
 24 have an aquifer that contains 100 gallons and --  
 25 but there's capacity for 200 gallons in this

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1 aquifer. Do you follow me so far?  
 2 **A. Yes.**  
 3 Q. And let's say that in the event of physical  
 4 recharge we inject 50 gallons of water into that  
 5 aquifer, now we have 150 gallons in that  
 6 aquifer, you follow me?  
 7 **A. Yes.**  
 8 Q. And in that sense, the 50 gallons that we  
 9 injected otherwise did not previously exist in  
 10 the aquifer, using your language; is that right?  
 11 **A. Yes.**  
 12 Q. But just to clarify, and, again, I think we're  
 13 saying the same thing, but just so we have a  
 14 clear record, with an aquifer maintenance  
 15 credit, when -- if we had 100 gallons, in this  
 16 hypothetical, in the aquifer, in the process of  
 17 accumulating an aquifer maintenance credit when  
 18 we ship this water off to town, we're not  
 19 actually putting 50 gallons of water into this  
 20 aquifer in my hypothetical, right?  
 21 **A. In your hypothetical, yes, but an AMC is**  
 22 **functionally equivalent in that we're not**  
 23 **pumping those 50 gallons of water either.**  
 24 Q. Right. And I'll take away the --  
 25 **A. In place of pumping that water, we're pulling it**

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1 **from the river and treating it and sending it**  
 2 **direct, so it's a functional equivalent of**  
 3 **putting it into the ground.**  
 4 Q. Okay. You answered my -- my question,  
 5 Mr. McCormick, and I'll take away the mystery,  
 6 I'm not going to revisit the functional  
 7 equivalent concept, so we'll go ahead and move  
 8 on for today's purposes. So let's move on to  
 9 point number 6.  
 10 **A. I'm sorry, sir, you cut out, what point did you**  
 11 **want to move on to?**  
 12 Q. Point number 6, please.  
 13 **A. Okay.**  
 14 Q. Point -- just because it's -- it's been a few  
 15 hours since I read this late last night, can you  
 16 capture for us on the record what it was that  
 17 Mr. Romero was saying in point number 6? I  
 18 think his point -- actually, I just read it and  
 19 refreshed my memory, it appears to me that his  
 20 point was that based on the modeling that  
 21 occurred and the way the USGS model was  
 22 calibrated, it would have a tendency or  
 23 potential for overestimating stream depletion,  
 24 which he said would translate to an  
 25 underestimation of aquifer storage depletion.

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1 Is that, in essence, what his position was in  
 2 point number 6?  
 3 **A. Yeah, I believe so, based on just reading it**  
 4 **through quickly here.**  
 5 Q. And then if we turn to your response, as -- as I  
 6 read through your response, and, again, I'm -- I  
 7 am not an expert, obviously, this is -- this is  
 8 the kind of thing you've done for a long time,  
 9 so if I oversimplify this, I apologize, in your  
 10 response, you indicate that the model, the USGS  
 11 model that was used by the City engaged a river  
 12 package to look at the Little Arkansas and  
 13 Arkansas Rivers; is that correct?  
 14 **A. That is correct.**  
 15 Q. And I think what you -- you mentioned in your  
 16 response is that there's a different type of  
 17 package that the City could have used but chose  
 18 not to, which is the streamflow routing package;  
 19 is that right?  
 20 **A. That is not correct. Your -- your explanation**  
 21 **that there is a different streamflow routing**  
 22 **package is correct, but it's actually the USGS,**  
 23 **when they put the model together, chose to use**  
 24 **the river package; and their model uses the**  
 25 **river package, and that is the model that we**

1 **used with the City. So it's not that the City**  
2 **made a choice to use the river over the stream,**  
3 **it's the developer to the model.**

4 Q. That -- that clarifies for me a lot. So in  
5 other words, you used the USGS model, and in --  
6 in another part of your expert report, actually  
7 flipping back to page 4 of your expert report  
8 just very quickly to clarify that point, you  
9 indicate under point 2, and I'm quoting, all the  
10 files used by Burns & McDonnell for the City's  
11 accounting model and drought model use the  
12 original USGS concept. So you clarify that  
13 exact point in -- in this supplemental expert  
14 report, that you just built off the exact USGS  
15 model; is that -- is that right?

16 **A. That's correct. There was some sort of a glitch**  
17 **which was addressed by Mr. Romero in his**  
18 **testimony that he thought that possibly we had**  
19 **some difficulty in our files, but we checked our**  
20 **files and I believe Mr. Romero checked his**  
21 **files, and we were all using the original USGS**  
22 **model.**

23 Q. Okay. That's -- that's helpful, so now moving  
24 back to page 5 of your expert report where we're  
25 talking about the differences of the river

1 quote. You just mentioned that that's something  
2 that couldn't be done in a day. As far as the  
3 work that would go into doing that, how long --  
4 and, again, no one's going to hold you to this  
5 because I -- I understand how it is in law,  
6 sometimes you don't know how long it will take  
7 to research something until you start  
8 researching it, and I'm sure the same is true in  
9 your world that it's impossible to really know  
10 how long that process would take with any  
11 certainty until you're -- you're in the middle  
12 of it, but do you have any idea in answer to my  
13 question?

14 **A. My off-the-cuff response is to -- to -- to**  
15 **change to the streamflow routing package,**  
16 **recalibrate, and have it peer reviewed to the**  
17 **level of the current USGS model, I would suspect**  
18 **would take in excess of a year, certainly to get**  
19 **it fully recalibrated, reviewed, and -- and**  
20 **agreed upon.**

21 Q. Okay. And just also to have a clear record,  
22 though, and you -- you answer this in -- in your  
23 response already, this is -- this is answered,  
24 but you say that the river package, which was  
25 utilized by the City, the USGS river package,

1 package and the streamflow routing package, and  
2 I apologize if I wasn't precise in my question,  
3 the City used the USGS model, which is the river  
4 package, but what you're saying here is it's  
5 possible to also utilize the streamflow routing  
6 package to accomplish some of this modeling, is  
7 that right, if one chose to?

8 **A. Yes, one could choose to use the streamflow**  
9 **routing package instead of the river package.**

10 Q. And just --

11 **A. That would -- now, let me explain what that**  
12 **would involve. That's basically redeveloping**  
13 **the model, you would have to change all of the**  
14 **river cells within the model to streamflow cells**  
15 **and then recalibrate the model from -- from the**  
16 **start because it's a significant change in the**  
17 **framework of the model.**

18 Q. Right, and that's --

19 **A. It isn't anything you could do in a day or so.**

20 Q. Okay. And I think that's what I understand you  
21 to be saying at the bottom of your response, I'm  
22 quoting you, you say, quote, converting the  
23 model from the river package to the streamflow  
24 routing package and recalibrating would require  
25 a substantial amount of time and expense, end

1 does not account for the river going dry;  
2 whereas, the streamflow package, which was not  
3 used, can account for the river going dry. Is  
4 that right?

5 **A. They both operate in different ways. The -- and**  
6 **I think what Mr. Romero was stating with his**  
7 **comment is that it would potentially show a**  
8 **better framework for going dry. So --**

9 Q. Yeah, and I think that was -- okay. Yeah, just  
10 to have a clear record here, 'cause you say it  
11 and I can quote -- have you quote your exact  
12 language in your response here, but in essence,  
13 what you say is the river package does not  
14 specifically account for the stream -- for the  
15 river going dry; whereas, the streamflow  
16 package, and I'm going to quote, quote, as the  
17 streamflow routing package will account for the  
18 river going dry and stop all infiltration to the  
19 aquifer, end quote. And so you're drawing a  
20 distinction between the two, correct?

21 **A. Yes, that would be a correct statement.**

22 Q. And so let me just ask you this in -- in  
23 follow-up to your -- your point. You said that  
24 it would -- it would take a lot of effort and a  
25 lot of time to do this analysis where you are --

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1 you convert to the streamflow routing package.  
 2 Let me just ask this: Could you learn something  
 3 from a basic sensitivity analysis rather than a  
 4 full calibration, basically a sensitivity  
 5 analysis with a stream conversion, and is it  
 6 true that that would actually take a lot less  
 7 effort and that could be something more easily  
 8 done, just a sensitivity analysis?  
 9 **A. Just doing a sensitivity analysis would be**  
 10 **easier to do than what I described previously**  
 11 **just a minute ago, but a sensitivity analysis**  
 12 **has been done on this previously. The USGS did**  
 13 **that and documents it in their report.**  
 14 Q. But did the sensitivity analysis that USGS  
 15 performed, it didn't account specifically for  
 16 the river going dry; is that right?  
 17 **A. I can't speak to exactly what it accounts for at**  
 18 **this time.**  
 19 Q. Did you do any kind of --  
 20 **A. But a sensitivity analysis -- a sensitivity**  
 21 **analysis wouldn't really do that anyway; it**  
 22 **would -- a sensitivity analysis would determine**  
 23 **how sensitive water levels and flows in the**  
 24 **model are to the conductance and inputs from the**  
 25 **ivers. It -- it's kind of apples and oranges,**

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1 **it -- it's not actually -- a sensitivity**  
 2 **analysis wouldn't pick out just if the river is**  
 3 **dry, what does that do to the model; it -- it**  
 4 **has more to do with the interaction between the**  
 5 **ivers and the groundwater. So I -- I don't**  
 6 **believe that the -- to answer -- try and answer**  
 7 **your question, I don't believe that a**  
 8 **sensitivity analysis would provide the results**  
 9 **of what --**  
 10 Q. Mr. McCormick, I think you froze for just a  
 11 moment. Did he freeze for anybody else?  
 12 **A. I seem to have -- everybody froze there for a**  
 13 **minute, I apologize.**  
 14 Q. Yeah, we just want to make sure your -- your  
 15 statement was accurately captured in the record.  
 16 It was about the last ten seconds of your last  
 17 statement you froze --  
 18 **A. Okay.**  
 19 Q. -- just for a second.  
 20 **A. Okay. A sensitivity analysis would not**  
 21 **specifically deal with the river going dry; it**  
 22 **would deal with the interaction between the**  
 23 **groundwater and the -- the stream and how**  
 24 **sensitive the model was to inputs from that. So**  
 25 **a sensitivity analysis would not evaluate**

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1 **specifically on the -- the river going dry.**  
 2 Q. And just to clarify, though, you can define the  
 3 sensitivity to address the conversion of the  
 4 river going dry? Just to clarify, that is  
 5 something that could be done, right?  
 6 **A. As I said, I believe the sensitivity analysis**  
 7 **has been done, which includes an evaluation --**  
 8 Q. I guess I'll -- I'll ask that question, did you  
 9 specifically in the sensitivity analysis you  
 10 performed or Burns & McDonnell performed, did  
 11 you do a sensitivity analysis that accounted for  
 12 the river going dry?  
 13 **A. To clarify, Burns & McDonnell did not do a**  
 14 **sensitivity analysis; the USGS did when they**  
 15 **developed the model, and as I said, the**  
 16 **sensitivity is a full gamut of flow. It's not**  
 17 **specific to a dry condition in the river.**  
 18 Q. Are you able to quickly point us to how or where  
 19 the USGS accounted for the river going dry in  
 20 any kind of sensitivity analysis with its river  
 21 flow model?  
 22 **A. I -- again, a sensitivity analysis is not**  
 23 **specific to one condition of the river. I**  
 24 **believe that in the USGS report, which I believe**  
 25 **is at the front of this -- I'm not sure what's**

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1 **included in the expert witness, I shouldn't say**  
 2 **that. In the -- I can't remember the name of**  
 3 **the report right now, or the number, but the**  
 4 **model report that the USGS put together in 2013,**  
 5 **there is a section titled Sensitivity Analysis,**  
 6 **or some similar term, that specifically refers**  
 7 **to what they did with their sensitivity and what**  
 8 **they determined was -- the model was sensitive**  
 9 **to.**  
 10 Q. Okay. For today's purposes, I'll -- I'll just  
 11 go ahead and move along to point number 8, start  
 12 of the next page.  
 13 **A. Okay. I'm at point number 8.**  
 14 Q. Point number 8, there's a point raised by  
 15 Mr. McCormick (sic), and then you have a  
 16 response, and in that response, I'm going to --  
 17 you -- you capture that the goal of an AMC is to  
 18 keep the aquifer as full as possible, but then  
 19 in your third sentence of your response, you --  
 20 starting with pumping that would reduce the  
 21 water levels, could you read that for the  
 22 record?  
 23 **A. Pumping that would reduce the water levels to**  
 24 **the proposed minimum index levels would only**  
 25 **occur in the event of a significant drought.**

1 **The net result would be higher water levels the**  
2 **majority of the time and lower water levels**  
3 **during drought periods when the flows in the**  
4 **Arkansas River, or Arkansas River, that result**  
5 **in infiltration of chlorides would also be**  
6 **lower.**

7 Q. Okay. I'm going to start with the first  
8 sentence you -- you read for the record, you  
9 said that pumping to the reduced -- to the new  
10 minimum index levels would occur only in the  
11 event of a significant drought, end quote,  
12 that's essentially what you say there, correct?

13 **A. Yes.**

14 Q. But just to clarify the record here, the  
15 proposal doesn't specify -- there -- there's no  
16 limitation in the sense that it's a condition of  
17 granting the City's proposal that you can only  
18 pump to the new minimum index levels during the  
19 time of an extreme drought, right, that's not a  
20 condition that's asked for in your proposal,  
21 correct?

22 **A. I believe you are correct, yes.**

23 Q. Okay. And to also further clarify, you indicate  
24 that it's better to keep the aquifer full the  
25 majority of the time, and certainly we've had

1 withdraw enough aquifer maintenance credits out  
2 to pump down to the new minimum index level, did  
3 you -- did you model that and -- and indicate  
4 the hydrologic impacts of -- of such changes?

5 **A. I -- I think we discussed this just a few**  
6 **minutes ago where we said we did a different**  
7 **approach to it, and Mr. Romero did a similar**  
8 **approach to, I believe, what you're describing.**

9 Q. Right, I'll move on. That last sentence, you  
10 say, the net result would be higher water levels  
11 the majority of the time, and, again, we -- we  
12 don't need to revisit that, we talked about that  
13 a lot, but then the second phrase you -- you  
14 indicate is that the water levels during drought  
15 periods when the flow in the Arkansas River that  
16 result in infiltration of chlorides would also  
17 be lower. Can you show me where specifically  
18 Burns & McDonnell in its proposal modeled or  
19 addressed the infiltration of chlorides in -- in  
20 Burns & McDonnell's modeling or in its -- in its  
21 proposal itself? I'm not interested in  
22 additional modeling that -- that's occurred that  
23 we're not privy to that's happened in the last  
24 11 months; I'm interested in what we have before  
25 us in the initial hearing and in the initial

1 this -- this academic debate for a long time,  
2 and I understand that concept, but then you go  
3 on to say that, indeed, during the time of an  
4 extreme drought, the City would indeed most  
5 likely withdraw its aquifer maintenance credits  
6 and at that point is when the City would pump  
7 down to the new minimum index level. In that  
8 sense, is that -- is that what you're capturing  
9 in your statement?

10 **A. Could -- could you state that again, please.**

11 Q. I think what you're saying in your statement is  
12 it leaves what the City is planning or -- or  
13 considerations they have made is -- is although  
14 the City would hope to keep the aquifer full the  
15 majority of the time, I think is what you're  
16 saying in this paragraph, during the time of an  
17 extreme drought, it -- it's theoretical or  
18 possible that the City would withdraw its  
19 aquifer maintenance credits and pump down to the  
20 new minimum index level. Is that, in essence,  
21 what you're saying?

22 **A. Yes, I believe that's a correct statement of it.**

23 Q. And so my question is is that -- did you model  
24 what would happen in the event of an extreme  
25 drought and what would occur if the City is to

1 proposal, can you tell us where Burns &  
2 McDonnell would have modeled chloride movement  
3 as it would be impacted by lowering to the new  
4 minimum index level and withdrawing aquifer  
5 maintenance credits during the time of an  
6 extreme drought?

7 **A. We did not model chloride migration in that**  
8 **context that you just stated.**

9 Q. Thank you. If we can move on, then, to the next  
10 point that's found here, which is point number  
11 9, there's -- there's an academic debate here  
12 about whether or not to utilize simplified  
13 accounting, and I completely get your response,  
14 and your response is, you know, wait a minute,  
15 we had this discussion with GMD2 and others, and  
16 other -- and everyone was -- was saying that we  
17 should do a more simplified accounting approach,  
18 that the accounting approach we've used in the  
19 past was quite complicated, let's do a more  
20 simplified accounting approach. Am I  
21 characterizing what you're saying in your  
22 response, just in a nutshell at least?

23 **A. I -- I believe so, yes. I believe that's a good**  
24 **characterization.**

25 Q. Okay. And so I think what Mr. Romero then said,



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1 and I'm going to quote him, last sentence of  
 2 point 9, he says, if a simplified approach is  
 3 necessary, end quote, so first of all, he's  
 4 talking about -- he's assuming in this last  
 5 statement that -- that we would be employing a  
 6 simplified approach; is that right? He says if  
 7 it's necessary, and that's the prefatory clause  
 8 of that sentence, so he's assuming that we're,  
 9 for the remainder of that sentence, we're  
 10 talking about a simplified approach; is that  
 11 right?  
 12 **A. Yes, I believe so.**  
 13 Q. Okay. So then he goes on to say, we recommend  
 14 development of a response function that accounts  
 15 for both low and high water levels in attempt to  
 16 improve the simplified accounting method over  
 17 varying aquifer conditions. So in other words,  
 18 he's saying that we should account for a -- we  
 19 should have just basically two consider --  
 20 additional considerations, account for low water  
 21 levels and -- and high water levels in the  
 22 simplified accounting approach. Is that what  
 23 Romero -- Mr. Romero appears to be trying to say  
 24 here?  
 25 **A. I believe that this statement is confusing the**

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1 **physical recharge accounting and the AMC**  
 2 **accounting. AMCs would only be able to be**  
 3 **accumulated at low water levels -- or, pardon**  
 4 **me, at high water levels. Because the City's**  
 5 **proposal clearly states that the City must do**  
 6 **physical recharge when it has the capacity to do**  
 7 **physical recharge. So I -- I believe that that**  
 8 **is -- is part of the confusion in this**  
 9 **statement, but it -- I believe what he's saying**  
 10 **is that if a simplified approach is being taken**  
 11 **for both, then physical recharge should account**  
 12 **for changes in water level.**  
 13 Q. Okay. And -- and maybe my memory is incorrect,  
 14 I thought with respect to your aquifer  
 15 maintenance credits, you were using -- you were  
 16 using an accounting based on the lower water  
 17 level, I thought that's what was captured in  
 18 your proposal?  
 19 **A. The proposal states that we have -- or the City**  
 20 **has to prioritize physical recharge, so if the**  
 21 **water levels are low, then physical recharge is**  
 22 **occurring. If the water levels are high and**  
 23 **they can't physically recharge due to capacity**  
 24 **in the aquifer, that is when --**  
 25 **MR. STUCKY: Am I the only one that**

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1 lost Mr. --  
 2 **THE REPORTER: I lost him too.**  
 3 **A. I'm -- I can still hear you. My internet**  
 4 **connection is having problems. Jen, I need you**  
 5 **off the computer, please. Am I back?**  
 6 **BY MR. STUCKY:**  
 7 Q. Yeah, Mr. McCormick --  
 8 **A. I apologize, I have kids doing homeschooling and**  
 9 **things, and I think we're over -- overtaxing my**  
 10 **internet connection. Let me try and -- and**  
 11 **rephrase that or start over.**  
 12 Q. No, I -- let me just say for the record here,  
 13 Mr. McCormick, it makes me smile and it makes me  
 14 feel so much more normal because if I had a  
 15 dollar for every time that's happened to me  
 16 during a Zoom call, I would actually be a rich  
 17 person. So, yeah, just the kids overtax the  
 18 internet with a video game or a video they're  
 19 watching or whatever it may be or their  
 20 homework, so I completely identify so no big  
 21 deal.  
 22 **A. Okay. I -- I apologize again anyway but thank**  
 23 **you, Mr. Stucky. Did you lose my whole**  
 24 **response, or should I -- should I just start**  
 25 **over, or what's going to work best?**

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1 Q. Maybe -- you know, my question was maybe a  
 2 little lengthy, maybe I'll just ask a more  
 3 specific question and -- and refocus us, and if  
 4 you feel the need to raise additional points, by  
 5 all means, I'm not going to preclude you. But  
 6 just to be -- to be clear here, in the  
 7 accounting approach for AMCs, the approach did  
 8 not take into account both a low and high water  
 9 condition or -- or -- and the simplified  
 10 accounting methodology that you're proposing in  
 11 general doesn't take into account low and high  
 12 water conditions and allow for that, right?  
 13 **A. It -- it -- it does. It's not within the math**  
 14 **because the City's required to do physical**  
 15 **recharge when they can, which is at low water**  
 16 **levels. The only time they can collect AMCs is**  
 17 **at high water levels. So it is accounting for**  
 18 **water levels because the accounting is only done**  
 19 **at high water levels for AMCs.**  
 20 Q. You know, I -- I think that if we choose to have  
 21 Mr. Romero clarify what he meant in his  
 22 statement here, we certainly can, but just for  
 23 our purposes today, I'm going to go ahead and  
 24 move on.  
 25 So I -- I believe the second two points --

1 or, I'm sorry, not the second two, that's --  
2 strike that from the record. The last two  
3 points that you raised in your expert report  
4 where we see the expert report, scenario B,  
5 page 6 mentioned and expert report, scenario C,  
6 page 6 mentioned, in essence the response you  
7 give is that the groundwater modeling files  
8 utilized for the development of the conclusions  
9 were not made available. And certainly I can  
10 produce it for the record if we need to, but  
11 Mr. McLeod sent an email that said that those  
12 concerns were resolved. In other words, you  
13 were able to look at the model files and address  
14 those model files with Mr. Romero. Is that a  
15 true statement?  
16 **A. Yes, we -- after I had submitted this report, we**  
17 **were able to set up a meeting with Mr. Romero**  
18 **and have a discussion about these, and he**  
19 **provided us with spreadsheets and information to**  
20 **clarify these points.**  
21 **MR. STUCKY:** You know, I don't --  
22 that's really helpful, Mr. McCormick, thank  
23 you so much for your time, I don't have any  
24 further questions.  
25 **PRESIDING OFFICER:** Any questions

1 Q. Okay. Do you have a copy of the exhibit  
2 available to you, or the report available to  
3 you?  
4 **A. Of the 2013-5042 report?**  
5 Q. Correct.  
6 **A. Or Mr. Austin's comments?**  
7 Q. I was pulling it directly from the USGS report,  
8 and it's probably also in his comments. On the  
9 first page of the text of Mr. Austin's report  
10 under review of report, the last paragraph, he  
11 also quotes the same language. You can take it  
12 from either location. As this is a statement  
13 from the USGS report, my question is do you  
14 disagree with the USGS?  
15 **A. I'm sorry, I'm still trying to track down the**  
16 **exact sentence. You cut out in the middle of**  
17 **it, and I -- I was unable to hear your question**  
18 **fully.**  
19 Q. I'll wait until you find model limitation  
20 number 2 on page 72 of the USGS report.  
21 **A. What exact page number is that in the USGS**  
22 **report, Ms. Wendling?**  
23 Q. It is on page 72 in the section model  
24 limitations, and the limitations are numbered  
25 and so it's number 2.

1 from Ms. Wendling?  
2  
3 **CROSS-EXAMINATION**  
4 **BY MS. WENDLING:**  
5 Q. I have just a few, Mr. McCormick. I'm not sure  
6 if you have the exhibits or the proposal in  
7 front of you, but in the City's exhibit, the  
8 proposal, they have attached USGS 2013-5042,  
9 which I believe is the USGS report regarding  
10 this model that you are probably familiar with?  
11 **A. That's -- that sounds correct to me, yes.**  
12 Q. And in Mr. Austin's report, he cites to the  
13 model limitations found on page 72 of that  
14 report, which says, the groundwater flow model  
15 was discretized using a grid with cells  
16 measuring 400 feet by 400 feet. Model results  
17 were evaluated on a relatively large scale and  
18 cannot be used for detailed analyses such as  
19 simulating water level drawdown near a single  
20 well. A grid with smaller cells would be needed  
21 for such a detailed analysis. Do you disagree  
22 with the USGS report?  
23 **A. I'm sorry, Ms. Wendling, you -- you cut in and**  
24 **out there a number of times and I believe I**  
25 **missed part of your question.**

1 **A. I'm getting there, I apologize for taking so**  
2 **long.**  
3 Q. That's okay.  
4 **A. All right. I'm there, model limitations.**  
5 Q. So my question for you is do you disagree with  
6 model limitation number 2?  
7 **A. As I said, I think that there are numerous tools**  
8 **that can be used with this for further**  
9 **evaluation at a more refined level. So to that**  
10 **extent, I would disagree that there -- there are**  
11 **ways to refine this down without refining the --**  
12 **the grid to smaller cells.**  
13 Q. You can add on to the model to get that further  
14 definition?  
15 **A. It's using a different tool to evaluate the**  
16 **model output than -- than just the model**  
17 **results.**  
18 Q. And did you use any such tool when you were  
19 preparing the proposal?  
20 **A. No, I did not.**  
21 **MS. WENDLING:** I have no further  
22 questions.  
23 **PRESIDING OFFICER:** Mr. McLeod?  
24 **MR. MCLEOD:** I don't think I have  
25 any further questions for the witness.

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1 **PRESIDING OFFICER:** Okay.  
 2 Mr. Stucky? I guess it would be,  
 3 Ms. Murray?  
 4 **MS. MURRAY:** I don't have any  
 5 questions.  
 6 **PRESIDING OFFICER:** Mr. Stucky?  
 7 **MR. STUCKY:** I don't -- I don't  
 8 think we have any further questions for  
 9 this witness so ...  
 10 **PRESIDING OFFICER:** Okay. Then,  
 11 Mr. McCormick, thank you for your  
 12 participation today, and you are dismissed.  
 13 **A. Thank you.**  
 14 **PRESIDING OFFICER:** So my  
 15 understanding, Mr. McLeod, was that that  
 16 was the extent of rebuttal testimony that  
 17 we were going to have today. Was that your  
 18 understanding?  
 19 **MR. MCLEOD:** Yes. I'm glad we  
 20 accomplished something today, that was it.  
 21 **PRESIDING OFFICER:** And, again, I  
 22 apologize for the delay, for my -- my  
 23 continued learning curve on new technology  
 24 and how to make sure everybody is covered.  
 25 That will conclude the proceedings for

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1 today and for this week.  
 2 **MR. STUCKY:** Before you conclude,  
 3 can I -- can I just raise one point on the  
 4 record?  
 5 **PRESIDING OFFICER:** Okay.  
 6 **MR. STUCKY:** I -- I guess this is  
 7 the question, I think it's consistent with  
 8 what we put in our -- our written motion to  
 9 exclude, and, again, the reason we didn't  
 10 file our -- our written motion to exclude  
 11 expert witness testimony that was outside  
 12 of the original expert testimony, the  
 13 reason we didn't file that motion earlier  
 14 was because we had no reason to know if the  
 15 City was even going to attempt such an  
 16 action.  
 17 So if you look at the -- what we're  
 18 asking for by way of relief in that motion,  
 19 you know, our first round of relief we  
 20 asked for was to have any such additional  
 21 opinions be stricken, but alternatively we  
 22 said that in the event there are going to  
 23 be new opinions that the City has had  
 24 11 months to prepare and create and we're  
 25 going to have now, I guess, a week and a

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1 half, perhaps, to respond to, I guess all I  
 2 would ask is our alternative request is  
 3 that the City give us some indication of  
 4 what those new opinions are going to be or  
 5 any additional witnesses the City is going  
 6 to raise and so we can have a short time to  
 7 prepare since the City has now had  
 8 11 months to decide how it's -- how it's  
 9 going to respond to at least our case in  
 10 chief.  
 11 So that -- that's my request, that we  
 12 get as much notice as we can in the short  
 13 amount of time if -- if such new testimony  
 14 isn't stricken and -- and, indeed, to not  
 15 mince words, that's what we're asking for  
 16 in our motion.  
 17 **PRESIDING OFFICER:** Mr. McLeod?  
 18 **MR. MCLEOD:** Well, still having not  
 19 seen the motion, it's -- it's difficult to  
 20 address what's in it or not, but I think  
 21 that you have adequately addressed the  
 22 so-called first round of relief with  
 23 respect to striking because I think there  
 24 were no new opinions in the live testimony  
 25 that Mr. McCormick presented in the six or

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1 so questions we managed to ask today before  
 2 the effort to -- to suppress his testimony  
 3 began. Nor were there really any new  
 4 opinions when we shifted from that to  
 5 simply going to the content of his 21  
 6 August 2019 report, which has been in the  
 7 hands of everybody, lo these many months  
 8 and indeed years.  
 9 And as I said yesterday and I thought we  
 10 had touched upon again today, any further  
 11 rebuttal evidence that the City might need  
 12 to offer would be directed at the testimony  
 13 of Intervenors that we all heard yesterday  
 14 for the first time. There was a tremendous  
 15 amount of material offered, and as of -- as  
 16 of this moment, I can't really tell anybody  
 17 what of that I think we might need to rebut  
 18 because it all happened only yesterday, and  
 19 is not a matter of all these months and  
 20 months and months that counsel is  
 21 asserting, it happened yesterday.  
 22 I was here yesterday virtually, I think  
 23 everybody was, and kind of saw how -- how  
 24 all of that went, and much of it, I think,  
 25 was testimony that nobody but perhaps

1 Intervenor's counsel might have  
 2 anticipated. So that's -- that's what  
 3 we're looking at further is reviewing that,  
 4 seeing whether there is some rebuttal  
 5 called for as to some part of that. I  
 6 don't have a sense yet whether the City  
 7 will or won't feel they need to offer  
 8 rebuttal, but if we do, that will be the  
 9 substance, the body of substance we're  
 10 looking at in terms of identifying any  
 11 rebuttal.  
 12 I would also like to add while we're on  
 13 the record that in trials and hearings, it  
 14 is a protocol, some would consider it part  
 15 of formal hearing decorum, almost  
 16 universally followed by trial lawyers that  
 17 remarks are directed to the hearing officer  
 18 and never by counsel between themselves  
 19 while the hearing is live and on the  
 20 record, and I would urge that we try to  
 21 follow that protocol when we come back for  
 22 further stages of this hearing because I  
 23 think it's a good protocol and it advances  
 24 civility in practice.  
 25 **MR. STUCKY:** I guess in response to

1 rebuttal from the City. So all we're  
 2 asking for is within this next week and a  
 3 half when -- when the City has a sense of  
 4 how they wish to respond to the Intervenor's  
 5 that they notify us and let us know so we  
 6 can also have some level of preparation.  
 7 **PRESIDING OFFICER:** Okay.  
 8 Mr. Stucky, and everyone, I think we can  
 9 address those logistics, they're -- they're  
 10 a fair subject for discussion, we will do  
 11 that after we have closed the record on the  
 12 proceedings today. We need to reconvene  
 13 just with counsel and with me to discuss  
 14 those things. So we will take those up.  
 15 And other than those matters, in other  
 16 words the logistics going forward, is there  
 17 anything else anyone needs to mention  
 18 before we close for today? Okay. Hearing  
 19 none, I thank everyone for their  
 20 participation. This will conclude these  
 21 proceedings for today, and we will resume  
 22 at a future date. The record is now  
 23 closed, thank you.  
 24 (Whereupon, the proceedings were  
 25 adjourned at 11:11 a.m.)

1 that, I'm not sure who or what that was  
 2 directed toward. We totally agree that any  
 3 objections or motions in that regard should  
 4 be provided to the hearing officer and  
 5 directed toward the hearing officer, and we  
 6 couldn't agree with that more.  
 7 And actually the second part of what  
 8 Mr. McLeod said, we also agree with, that  
 9 to the extent the City is responding to new  
 10 testimony that was brought by the  
 11 Intervenor's in the last few days, we do  
 12 think it makes sense and it's appropriate  
 13 for the City, depending on what the scope  
 14 of that response is, that it is appropriate  
 15 for the City to -- to so respond depending  
 16 on how that scope is defined.  
 17 But all we're asking is that the City  
 18 will have a week and a half to try and  
 19 determine how it's going to respond to the  
 20 Intervenor's testimony; whereas, if we find  
 21 out for the first time at the hearing how  
 22 the City plans to respond, the rest of us  
 23 will get a matter of minutes or -- or maybe  
 24 a matter of hours to try and determine what  
 25 additional rebuttal we want to that

1 C E R T I F I C A T E  
 2 STATE OF KANSAS )  
 3 SEDGWICK COUNTY ) ss:  
 4 I, Nancy L. Rambo, a Certified Shorthand  
 5 Reporter, within and for the State of Kansas, do  
 6 hereby certify that the foregoing is a true and  
 7 correct transcript of the proceedings had at the  
 8 time and place hereinbefore set forth.  
 9 I further certify that I am not a relative  
 10 or employee or attorney or counsel of any of the  
 11 parties, nor am I a relative or employee of such  
 12 attorney or counsel, nor am I financially  
 13 interested in the action.  
 14 WITNESS my hand and official seal at  
 15 Wichita, Sedgwick County, Kansas, this 18th day of  
 16 February, 2021.  
 17  
 18 NANCY L. RAMBO, R.P.R., C.S.R.  
 19 Registered Professional Reporter  
 20 Certified Shorthand Reporter  
 21 Costs:  
 22  
 23  
 24  
 25

<b>A</b>	3474:21;3485:21,25; 3487:8;3495:22,25; 3496:3,6;3504:5,18; 3505:23;3512:6; 3521:5;3523:19; 3524:18;3525:22; 3526:6;3530:6;3531:1; 3540:16;3551:7	<b>Adrian (15)</b> 3471:1,1,5;3473:7; 3476:2,5;3477:4,22; 3494:3,4,6;3495:7,12; 3498:24;3499:6	3481:4;3498:19; 3499:2	<b>apparently (6)</b> 3471:7,21;3506:14, 16;3513:11,17
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<b>able (14)</b> 3491:22,24;3496:2, 15,19;3497:19,20; 3506:3;3508:23; 3513:20;3532:18; 3539:2;3542:13,17	<b>add (4)</b> 3492:20;3511:21; 3545:13;3550:12	<b>advance (1)</b> 3478:6	<b>almost (2)</b> 3501:16;3550:15	<b>appearing (1)</b> 3469:14
<b>absolute (1)</b> 3472:8	<b>added (1)</b> 3518:5	<b>advances (1)</b> 3550:23	<b>along (5)</b> 3508:18;3512:23; 3515:15;3517:3; 3533:11	<b>appears (5)</b> 3481:25;3508:20; 3515:3;3524:19; 3538:23
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<b>accepted (1)</b> 3469:23	<b>additional (15)</b> 3483:7;3485:12,18; 3486:9;3489:2;3508:4; 3511:16,17;3515:14; 3536:22;3538:20; 3541:4;3547:20; 3548:5;3551:25	<b>aggregated (1)</b> 3509:7	<b>although (4)</b> 3473:25;3475:17; 3508:4;3535:13	<b>apply (4)</b> 3511:5;3521:21,22; 3522:7
<b>accomplish (2)</b> 3510:20;3527:6	<b>additionally (2)</b> 3515:9,11	<b>aggregates (1)</b> 3509:21	<b>always (1)</b> 3476:22	<b>applying (1)</b> 3490:2
<b>accomplished (1)</b> 3546:20	<b>additions (1)</b> 3473:20	<b>aggregating (1)</b> 3509:22	<b>AMC (4)</b> 3522:20;3523:21; 3533:17;3539:1	<b>appreciate (1)</b> 3505:4
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**In The Matter Of:**  
*City of Wichita's Phase II Aquifer Storage*

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*Formal Hearing - Volume XV*  
*February 19, 2021*

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1 comments may still be submitted in writing  
2 regarding this case no later than 5:00 p.m.  
3 on February 26, 2021, and those would be  
4 submitted either by regular mail or by  
5 email to Ronda Hutton at the Division of  
6 Water Resources. And the Division of Water  
7 Resources has a website and they have a  
8 page dedicated to the Wichita ASR case, and  
9 on that page you'll find instructions for  
10 how to submit public comments in writing.  
11 Following today's hearing, there will be  
12 a briefing scheduled for the parties, and  
13 then after the briefing is all concluded,  
14 then an order -- a recommended order will  
15 be issued to the chief engineer and to the  
16 parties simultaneously. Details of that  
17 briefing schedule will be set forth in an  
18 order to be issued in the next few days.  
19 As a housekeeping item, the Groundwater  
20 Management District on February 5th had  
21 filed a motion in limine to exclude  
22 rebuttal expert testimony of the City, and  
23 through an agreement reached between the  
24 parties on the record during the hearing on  
25 February 5th, that motion has been resolved

1 Groundwater Management District No. 2  
2 appears by Dave Stucky and Tom Adrian.  
3 **MS. WENDLING:** Tessa Wendling for  
4 the Intervenors.  
5 **PRESIDING OFFICER:** Okay, thank you  
6 very much. Mr. McLeod, you're up.  
7 **MR. MCLEOD:** Thank you. I do want  
8 to reserve 20 minutes for rebuttal, and I  
9 will try to keep my focus on large points.  
10 Given the scope of the record, I'm -- I'm  
11 really not sure what we'll accomplish with  
12 argument today, but we'll try to stay out  
13 of the weeds.  
14 Initially, I want to reiterate the point  
15 that the City's proposal has two  
16 independent elements, one is establishing  
17 the modified accounting procedure to  
18 recognize aquifer maintenance credits, and  
19 the other is revising the existing lower  
20 index levels from those interpolated in  
21 1993 to levels that would allow expanded  
22 access to credits at ASR II facilities to  
23 alleviate stranding of credits in a  
24 prolonged drought. These proposed  
25 modifications are not dependent on one

1 and no ruling is necessary.  
2 For today's closing arguments, each  
3 party is allowed one hour total. Each  
4 party may, at its discretion, reserve part  
5 of that hour to present a rebuttal argument  
6 after all the other parties have  
7 presented -- have had an opportunity to  
8 present their closing arguments. The order  
9 in which we will take presentations is the  
10 City, followed by the Division of Water  
11 Resources, followed by the Groundwater  
12 Management District, and then the  
13 Intervenors.  
14 Are there any other matters that we  
15 should attend to before we take appearances  
16 and begin?  
17 Okay. So in the order that I just  
18 mentioned, may we please have appearances  
19 today.  
20 **MR. MCLEOD:** Brian McLeod, deputy  
21 city attorney for the City of Wichita,  
22 Kansas.  
23 **MS. MURRAY:** Stephanie Murray for  
24 DWR.  
25 **MR. ADRIAN:** The Equus Beds

1 another, each would be useful separately,  
2 each could be approved without the other.  
3 Also for clarity, I think there is a  
4 need to emphasize that some of the topics  
5 discussed in the proposal for purposes of  
6 background and transparency are not  
7 requested permit modifications but are  
8 background decisions that have already been  
9 made by the City of Wichita. These include  
10 the Wichita City Council's decision to plan  
11 for drought mitigation using the 1 percent  
12 drought modeled by High Country Hydrology.  
13 This is a policy decision made by the  
14 City's governing body.  
15 The same is true of the features of the  
16 City's existing water conservation program  
17 and the triggers and planned responsive  
18 measures in the City's existing drought  
19 response plan. Likewise, as to City's  
20 determinations, based on city council  
21 policy direction and subsequent analysis,  
22 to first pursue drought remediation  
23 planning, in part, through ASR recharge  
24 credits and, second, to pursue a goal of  
25 accumulating at least 60,000 acre-feet of

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1 credits for just drought mitigation  
 2 purpose.  
 3 The District and Intervenors may not  
 4 like the City of Wichita's decision to plan  
 5 the use of ASR recharge credits for drought  
 6 mitigation or to accumulate at least  
 7 60,000 acre-feet of credits for that  
 8 purpose, but those decisions have been  
 9 made, and they're not among the issues to  
 10 be decided in this hearing. The  
 11 consideration relevant to the proposal is  
 12 whether the credits will be accumulated  
 13 under existing ASR permit conditions or  
 14 with the modifications proposed by the  
 15 City.  
 16 In their arguments opposing the  
 17 proposal, the District and Intervenors have  
 18 focused today on comparing possible impacts  
 19 of the proposal with a scenario where the  
 20 City makes no changes from its management  
 21 of water resources under the City's 1993  
 22 Integrated Local Water Supply Plan. That  
 23 is, their analyses compare the possible  
 24 impacts of the proposal with their  
 25 wished-for scenario in which, first, the

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1 as its main source of supply to using  
 2 Cheney Reservoir as its main source of  
 3 supply instead.  
 4 As a result of that shift, surface water  
 5 became 60 percent rather than 40 percent of  
 6 the City's overall water source. And as  
 7 shown by figure 13 in the proposal, which  
 8 was on page 3-4, by 2016, water levels in  
 9 the aquifer increased by more than 30 feet  
 10 in some places as a result. The figure 12  
 11 in the proposal to which I have previously  
 12 alluded also shows that irrigator use  
 13 continued to trend above 1993 in all years.  
 14 So we know, indeed, that the recovery of  
 15 the aquifer was due to the City of  
 16 Wichita's stewardship and change in  
 17 practices and not to new conservation  
 18 measures on the part of irrigators.  
 19 As a result of the City's change in  
 20 water resource management and, to a lesser  
 21 extent the ASR I and ASR II recharge  
 22 activities that commenced in 2007 and 2013,  
 23 respectively, the aquifer has been restored  
 24 to near-predevelopment levels, which  
 25 unfortunately limits the potential for

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1 City would only use ASR intermittently to  
 2 help keep the aquifer full rather than to  
 3 accumulate recharge credits for drought  
 4 mitigation; and, second, that the City  
 5 would continue to substantially underuse  
 6 its 40,000 acre-feet of senior water rights  
 7 every year so that that water is available  
 8 to irrigators. That is a flawed approach  
 9 because instead the relevant comparison for  
 10 purposes of evaluating the proposal would  
 11 be comparison of the possible impacts of  
 12 the proposal with the impacts that would  
 13 occur under the current ASR accounting  
 14 method with the existing lower index  
 15 levels.  
 16 So turning specifically to discussion of  
 17 physical recharge accounting versus the  
 18 accounting with alternative -- excuse me,  
 19 aquifer maintenance credits, I will try to  
 20 do that with respect to the AMCs. I've  
 21 shown in figure 12 of the proposal, which  
 22 was on page 3-3 of the proposal and  
 23 discussed by Mr. Pajor during his  
 24 testimony, between 1993 and 1998, the City  
 25 shifted from using Equus Beds groundwater

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1 additional physical recharge. As a  
 2 consequence and as mentioned in 2.4.2 of  
 3 the proposal on page 2-11, to create  
 4 potential for efficient physical recharge  
 5 at the ASR plant capacity rate of 30  
 6 million gallons per day under existing  
 7 permit conditions, the City would need to  
 8 reduce the water levels in the aquifer to  
 9 1998 water levels.  
 10 There is a road to this result. Under  
 11 existing permit conditions, the City can  
 12 accomplish this by reversing its 1993  
 13 resource management practices and using as  
 14 much of its annual 40,000 acre-feet senior  
 15 rights in the aquifer as system needs and  
 16 treatment plant capacity will allow. After  
 17 reduction of aquifer levels to the 1998  
 18 levels, the City would accrue credits by  
 19 physical recharge to the extent allowed by  
 20 plant permit conditions and plant capacity  
 21 but would also continue to use its  
 22 40,000 acre-feet senior rights to maintain  
 23 aquifer levels at the 1998 levels until at  
 24 least 60,000 acre-feet in recharge credits  
 25 were accumulated.

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1 We have reason to think based on accrual  
2 of credits over -- over history that we  
3 would be talking about a significant span  
4 of years during which the aquifer levels  
5 would have to be maintained at 1998 levels  
6 to facilitate that physical recharge. And  
7 the City in that scenario would be  
8 basically taking water out and putting  
9 water in to get the recharge credits, so  
10 the level of the aquifer would not change  
11 as a result of that conduct but over time  
12 progressively more of the water in the  
13 aquifer would be City physical recharge  
14 credits. Indeed, under existing permit  
15 conditions, the City could actually do this  
16 indefinitely as under current permit  
17 conditions there is no existing cap on  
18 credits, and credit retention at the 1998  
19 water levels, as was mentioned on page 4-2  
20 of the proposal, would be at 95 percent.  
21 So the aquifer by this management would be  
22 kept at 1998 levels, but progressively more  
23 of the water, potentially the entire basin  
24 storage area, would become City physical  
25 recharge credits over time.

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1 If the modeled eight-year drought were  
2 to occur with the aquifer at 1998 levels,  
3 and recall this is how it has been modeled  
4 by both Burns & Mac and Balleau  
5 Groundwater, the modeling shows that - and  
6 let me just refer here to Balleau's  
7 groundwater modeling - shows that the full  
8 use of the City's 40,000 acre-feet of  
9 senior rights during the drought would  
10 potentially impact supply of 29 wells,  
11 which appear from Balleau's figure 7 in  
12 their report to be 27 domestic wells and  
13 two irrigation wells.  
14 The additional potential impact that  
15 they have assigned to the modifications in  
16 the proposal, modeling on the assumption  
17 that the City would pump credits to reach  
18 the proposed new lower index levels, was  
19 six additional wells, all of which were  
20 domestic wells. That is, the majority of  
21 wells impacted by City pumping in the  
22 Balleau modeling will be impacted by the  
23 City's existing 40,000 acre-feet rights if  
24 the aquifer enters the drought at 1998  
25 levels due to the need to facilitate

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1 physical recharge under the existing permit  
2 conditions.  
3 Looking also at chloride impacts,  
4 comparison of the well site maps introduced  
5 by Intervenor with the contour maps in  
6 figure 6 of the Balleau report reflects  
7 that the Intervenor who testified will  
8 likely not lose access to water at their  
9 wells in the modeled drought even if the  
10 ASR permit modifications are approved. And  
11 I think at least one of the Intervenor  
12 acknowledged in his testimony that his well  
13 is not in danger of being dewatered.  
14 To the extent that the testifying  
15 Intervenor are worried about chlorides,  
16 which did seem to be all of their main  
17 concerns, they are likely to have greater  
18 chloride problems under existing permit  
19 conditions than with the proposed  
20 modifications. The Klager graphic, which  
21 is figure 8 in the Balleau report, projects  
22 chloride impacts from the 2014 USGS study  
23 which modeled several scenarios. The  
24 import of the scenarios modeled in 2014 and  
25 also George Austin's testimony on the

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1 earlier chloride transportation study  
2 referenced in his report is that the wells  
3 in the chloride threatened areas will be  
4 impacted by the City's increased use of its  
5 40,000 acre-feet senior rights to reduce  
6 aquifer levels to 1998 levels and also will  
7 be impacted by the maintenance of the 1998  
8 levels to facilitate physical recharge for  
9 a long period of years.  
10 And I think Mr. Austin acknowledged in  
11 his testimony that the impact of low water  
12 levels for a long period of years could  
13 potentially be much greater for chloride  
14 migration concerns than a transitory impact  
15 caused by pumping with the modifications  
16 proposed by the City in an occasional  
17 severe but transitory drought.  
18 Further, if we look at figure 6 of the  
19 Balleau report, it reflects the impact on  
20 water levels in this part of the aquifer -  
21 that is, the part of the aquifer where the  
22 Intervenor's wells were mapped - in the  
23 modeled eight-year drought will be closely  
24 similar whether or not the proposed permit  
25 modifications are approved. I think it was



<p style="text-align: right;">Page 3570</p> <p>1 a cumulative difference of a foot or two.                  2 And this suggests that the chloride impact                  3 from the drought, to the extent directly                  4 related to changes in water gradient, would                  5 also be closely similar whether or not the                  6 proposed modifications are approved.                  7 Now, if we look at the mitigating                  8 effects of the proposed accounting changes                  9 to allow aquifer maintenance credits, the                  10 first large one is the City would not need                  11 to draw aquifer levels down to 1998 levels                  12 to accumulate credits. Indeed, the                  13 accounting method would provide an                  14 incentive not to do that because to the                  15 extent the City could use the AMC                  16 accounting method and leave the aquifer                  17 full, a lesser leakage rate is imputed than                  18 what the -- the leakage rate from actual                  19 physical recharge of a very full aquifer                  20 would be.                  21 As a result, the immediate impacts to                  22 water levels and chloride migration posed                  23 by use of the City's 40,000 acre-feet                  24 senior rights to lower the aquifer to 1998                  25 levels would not occur in the AMC scenario.</p>	<p style="text-align: right;">Page 3572</p> <p>1 As demonstrated at length in                  2 hypotheticals during the testimony of                  3 several witnesses, the net quantitative                  4 effect on the aquifer of taking out water                  5 and putting it back for a physical credit                  6 is the same as treating water from the                  7 river instead of taking that water from the                  8 aquifer and getting a credit for that.                  9 Former Chief Engineer Barfield was correct                  10 in reasoning that the AMCs are a functional                  11 equivalent of physical credits accrued by                  12 taking water out and then recharging it.                  13 Additionally, the aquifer maintenance                  14 credit has the cost advantage of skipping                  15 that withdrawal/recharge step, and in so                  16 doing, it also avoids churning of the                  17 aquifer, withdrawing water, then injecting                  18 new water, which is a benefit to water                  19 quality, and that we're not stirring the                  20 water up all the time under the AMC                  21 scenario, and which also reduces the                  22 potential underflow and sinkhole issues                  23 that so concerned Mr. Carmichael in his                  24 testimony.                  25 Overall, the modeling presented by the</p>
<p style="text-align: right;">Page 3571</p> <p>1 As a further result, the impacts to water                  2 levels and chloride migration from                  3 maintaining the aquifer at 1998 levels for                  4 a long period of years to facilitate                  5 physical recharge also would not occur.                  6 Consequently, for most periods, with the                  7 exception of major droughts similar to the                  8 modeled eight-year, 1 percent drought,                  9 the aquifer would be maintained at                  10 near-predevelopment levels and the City                  11 would resume the practice of drawing most                  12 of its supply from Cheney Reservoir,                  13 leaving most of its 40,000 acre-foot annual                  14 rights in the aquifer unexercised, which                  15 would benefit other users.                  16 Even in the period of a major drought,                  17 under the AMC proposal, drought impacts                  18 would be lessened by going into the drought                  19 with the aquifer full rather than at 1998                  20 levels. And if the six domestic wells                  21 identified in the Balleau study were still                  22 affected at all, it would be for the                  23 transitory period impacted by the drought,                  24 so something that -- that would be an issue                  25 potentially in 8 out of 100 years possibly.</p>	<p style="text-align: right;">Page 3573</p> <p>1 parties in this case reflects that the AMC                  2 accounting mechanism provides substantial                  3 benefit to all users of the aquifer in all                  4 periods, with potential offsetting,                  5 transitory detriment to a small number of                  6 domestic wells that might need to be                  7 extended in the event of a modeled                  8 eight-year drought.                  9 Turning to the revised index levels, the                  10 problem with the existing index levels is                  11 that they place the onus on the City to                  12 make a resource management decision to take                  13 credits early in any drought, before the                  14 City can really evaluate whether that                  15 drought will be of a severity and nature to                  16 necessitate that use of credits. That                  17 decision to take early -- early use of                  18 credits in the early years of a possible                  19 extended drought would reduce the water                  20 levels in the aquifer unnecessarily in                  21 those early years of the drought,                  22 unfavorably impacting all users of the                  23 aquifer, and once gone, the water taken                  24 early to preserve credits will likely be                  25 gone for the duration of the drought.</p>

1 Further, under the current accounting  
2 method, the only existing credits are  
3 physical recharge credits, and I think it  
4 was Mr. Pope who testified that a large  
5 part of the theoretical basis for the  
6 physical recharge credits is that the City  
7 has reduced that water to its dominion and  
8 control, treated it, and put it in storage  
9 and that for practical purposes, unlike  
10 most usufruct in water rights, it should be  
11 regarded as the City's water. But when  
12 credits become stranded in a major drought  
13 due to the 1993 index levels, the effect of  
14 that stranding is that other parties are  
15 unfairly allowed to take the water that the  
16 City injected in the aquifer while the  
17 City, no matter how badly it may need that  
18 water by that point in a protracted  
19 drought, cannot take the water, although  
20 the City is the party responsible for the  
21 existence of that water in the aquifer.  
22 I would point out the Balleau report  
23 does also confirm the conclusions of the  
24 Burns & McDonnell modeling that some  
25 credits would be stranded in the modeled

1 that correct?  
2 **MR. MCLEOD:** Yes, thank you.  
3 **PRESIDING OFFICER:** Okay. The  
4 Division of Water Resources, please.  
5 **MS. MURRAY:** Thank you. I would  
6 like to also reserve 20 minutes for  
7 rebuttal.  
8 **PRESIDING OFFICER:** Thank you, go  
9 ahead.  
10 **MS. MURRAY:** I'm going to also keep  
11 my closing argument remarks brief for a  
12 couple of reasons, the first is that, as  
13 Mr. McLeod mentioned, I really feel that  
14 the effectiveness of any oral advocacy is  
15 going to be limited here given the length  
16 of these proceedings and the size of the  
17 record in this matter; and the second is  
18 that DWR is in a bit of a unique position  
19 here as we are neither the party that is  
20 necessarily advocating for the approval of  
21 the City's proposal or the party that's  
22 opposing it. So that being said, I'll save  
23 the majority of DWR's comments for our  
24 post-hearing brief after the agency's had  
25 more time to thoroughly review the record

1 drought and also shows that only a handful  
2 of additional domestic wells have been  
3 identified as impacted if the City were  
4 allowed to take accumulated credits between  
5 the existing and proposed new index levels.  
6 All in all, the City's stewardship of  
7 the aquifer since 1993 has been exemplary,  
8 if not, indeed, extremely generous to other  
9 users of the aquifer overall. The proposed  
10 modifications to the existing permit  
11 conditions are really offered to enable the  
12 City to continue to follow its 1993  
13 resource management practices while also  
14 using ASR infrastructure to advance its  
15 drought mitigation concerns. Essentially  
16 the modifications would be a mitigation of  
17 impacts that will occur to other aquifer  
18 users if the City has to proceed under  
19 existing permit conditions.  
20 And with that, I will -- I will wrap up  
21 my remarks and save further for rebuttal.  
22 Thank you.  
23 **PRESIDING OFFICER:** Okay. Thank  
24 you, Mr. McLeod. And as I understand it,  
25 you've reserved 20 minutes for rebuttal; is

1 and all of the testimony that's been  
2 presented.  
3 I do, however, have just a few, largely  
4 bigger picture points that I would like to  
5 make in closing. To frame my comments, I  
6 want to first address the contention that  
7 we've heard several times, that the  
8 proposal would allow the City to use water  
9 that is already earmarked for another user  
10 or essentially water that already belongs  
11 to someone else. I feel the need to  
12 address this because I really feel that  
13 this contention and the implication that it  
14 carries mischaracterizes a fundamental  
15 aspect of Kansas water law.  
16 The District alleges an unconstitutional  
17 taking in its motion to dismiss, and  
18 Mr. Stucky elicited a lot of testimony the  
19 last time we were together that I believe  
20 was probably aimed at bolstering that  
21 argument. He asked several witnesses, for  
22 example, whether they had ever given the  
23 City of Wichita permission to pump water  
24 from under their land, as well as asking  
25 them to estimate the investment-backed

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1 expectation that they had in their  
 2 property.  
 3 Now, I bring this up because the answers  
 4 to questions of that nature, frankly, are  
 5 just not relevant. The implication that  
 6 permission from an overlying landowner is  
 7 required to pump groundwater is contrary to  
 8 the fundamental principles of western water  
 9 law that a water right is a usufruct right;  
 10 that is, it is a right to put water to  
 11 beneficial use within the quantity and rate  
 12 limitations of your own water right, but it  
 13 is not a right to own or to otherwise  
 14 control water in a river or water in state  
 15 in an aquifer.  
 16 Water in state in an aquifer, in fact,  
 17 does not belong to anyone, and the mere  
 18 fact that another user would have also had  
 19 the lawful right to that water had they  
 20 removed it from the ground first does not  
 21 mean that the first user has taken water  
 22 that belonged to the second. This  
 23 principle is well established and fosters  
 24 the development of water for economic gain,  
 25 a major tenet of the doctrine of prior

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1 appropriation.  
 2 So with that general principle in mind,  
 3 I next want to touch on this issue of  
 4 distrust between the City of Wichita and  
 5 surrounding smaller municipalities,  
 6 irrigators, and domestic users that both  
 7 the District and the Intervenor have  
 8 brought up on several occasions. I want to  
 9 say that DWR recognizes that this distrust  
 10 exists and that it is very real for those  
 11 water users who have lived in close  
 12 quarters with the City, some of them for  
 13 decades as you heard testimony about.  
 14 However, I want to emphasize that while  
 15 we do recognize that a significant level of  
 16 distrust does exist, it would just simply  
 17 be inappropriate to allow that distrust and  
 18 events that happened 40, 50, or 60 years  
 19 ago to color our judgment regarding the  
 20 proposal that's in front of us today.  
 21 Further, I want to emphasize and I really  
 22 hope provide some reassurance that DWR has  
 23 always been and remains committed to  
 24 holding the City accountable the same as we  
 25 would any other water user, whether this

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1 proposal is approved or not. Excuse me.  
 2 On a related note, I think that this  
 3 distrust has probably informed the District  
 4 and the Intervenor's characterization of  
 5 the ASR project in several pleadings, and  
 6 the general theme advanced by those parties  
 7 throughout the proceedings that to grant  
 8 the City what it's asking for here would  
 9 unfairly reward it for poor water  
 10 management. You know, DWR just doesn't see  
 11 it that way. We actually feel that the  
 12 City has been a good steward of the aquifer  
 13 and that its good management is a very  
 14 significant reason for the rebound in water  
 15 levels since 1993 and the high water table  
 16 seen in the Equus Beds today.  
 17 Actually, as Mr. McLeod kind of alluded  
 18 to, the City's own good management is part  
 19 of the reason it has need for this  
 20 proposal. The aquifer is so full now that  
 21 there is no space to inject water for the  
 22 accumulation of physical recharge credits  
 23 as the City originally intended to do.  
 24 Now, it is true you heard some testimony  
 25 from the Intervenor saying that ASR

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1 doesn't work. It's true that the ASR  
 2 project hasn't always run perfectly, but  
 3 the fact that there were some bumps in the  
 4 road as things got rolling doesn't mean  
 5 that the project has failed. Likewise, the  
 6 fact that the City's view of how the ASR  
 7 project fits into its overall water  
 8 management strategy and how -- the fact  
 9 that that view has evolved over time  
 10 doesn't mean that the ASR project has  
 11 failed or doesn't work as some testimony  
 12 has suggested. In any case, it's DWR's  
 13 view that it's simply not accurate to  
 14 suggest that granting the City's proposal  
 15 would reward it for poor water management.  
 16 Along those lines, I do want to  
 17 acknowledge, though, that DWR does feel  
 18 that probably from the very inception of  
 19 the ASR project the City has not always  
 20 marketed the project as well as it maybe  
 21 could have. We do believe that more or  
 22 better-focused public outreach along the  
 23 way likely could have headed off some of  
 24 these concerns that you have heard brought  
 25 forth throughout these proceedings, long

1 before we got to this point. However,  
2 similar to this issue of distrust that I  
3 spoke about a moment ago, it would likewise  
4 be inappropriate to disregard the key facts  
5 that support the reasonableness of this  
6 proposal simply because the City may not  
7 have conveyed those facts to the public in  
8 the manner that it perhaps could have.  
9 So turning to those few key facts that  
10 support the reasonableness of the proposal,  
11 it is DWR's view that the bulk of the  
12 testimony elicited by both the District and  
13 the Intervenor has really keyed on things  
14 that are not truly relevant and have simply  
15 obscured and unnecessarily complicated  
16 those key facts.  
17 First, it's DWR's opinion that the  
18 effects of the proposal from a  
19 hydrogeological standpoint are almost  
20 universally good ones. In times of normal  
21 rainfall, the proposal would allow the  
22 aquifer to be managed at a fuller level.  
23 This has numerous benefits: A stable  
24 hydraulic gradient that will slow the  
25 encroachment of the Burrton salt plume,

1 that the aquifer could actually be somewhat  
2 lower than what the City's model shows  
3 after times of high pumping. So those  
4 possibilities and a potential for that  
5 degree of error in modeling would be  
6 concerning to DWR if we were talking about  
7 a proposal that was projected to leave the  
8 aquifer 10, 20, 30 percent full. But the  
9 fact is that even a proposal that only  
10 leaves the aquifer 70 percent full versus  
11 80 percent full is still very much a  
12 reasonable proposal in our view.  
13 DWR does not hold any groundwater  
14 modeling that it reviews to a standard that  
15 it be perfect or that it exhaustively  
16 account for every potential that you could  
17 ever think of, and the City's modeling here  
18 shouldn't be held to that standard either.  
19 DWR has seen nothing really to suggest that  
20 the City's modeling work was not perfectly  
21 sufficient for its intended purpose. It's  
22 also important to keep in mind on this  
23 point that the Equus Beds see excellent  
24 natural recharge compared to most of the  
25 rest of the High Plains Aquifer so would

1 lower pumping costs to all irrigators in  
2 the area, and of course better drought  
3 preparedness. Additionally, during times  
4 of normal rainfall, maintaining the aquifer  
5 at a fuller level will cause the Little Ark  
6 to gain water from the aquifer, mitigating  
7 the need for any administration of water  
8 rights to protect minimum desirable  
9 streamflow on the river, which I will touch  
10 on again a bit later.  
11 Overall, much of the expert testimony  
12 presented by the District and the  
13 Intervenor has simply ignored the benefits  
14 that the proposal will provide during all  
15 of the times that the area is not  
16 experiencing a 1 percent drought, while  
17 also ignoring the fact that the City's  
18 model shows that even in the last year of a  
19 1 percent drought in which the City has  
20 pumped all of the water that the proposal  
21 would allow it to, the Equus Beds will  
22 remain 80 percent full on average.  
23 Now, the District's experts have picked  
24 that model apart, arguing that its  
25 projections may not be exactly right and

1 likely rebound well once a drought ended,  
2 as we saw and as they did following 1993.  
3 So I mentioned water levels in the  
4 aquifer under the proposal a moment ago,  
5 and that brings me to my next point which  
6 concerns the District and the Intervenor's  
7 contention that the City should have been  
8 required to meet the standards set out in  
9 the provisions of the Kansas Water  
10 Appropriation Act that govern applications  
11 for new appropriations and change  
12 applications.  
13 Prominent among those requirements is a  
14 showing that the new appropriation or  
15 change will not cause impairment to other  
16 water users, which we have heard a lot of  
17 testimony about. So first and very  
18 importantly, I want to emphasize that the  
19 City's proposal does not constitute either  
20 an application for a new appropriation or a  
21 change application, and the standards set  
22 out in those statutory provisions thus do  
23 not actually apply.  
24 Second, and perhaps even more important,  
25 I want to stress that DWR does not ever

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1 deny any kind of application or any kind of  
 2 proposal because of a speculative potential  
 3 that the water right at issue might cause  
 4 an impairment to some unknown user at some  
 5 unknown point in the future. Our  
 6 impairment statutes simply don't function  
 7 that way and they were not intended to.  
 8 Those statutes exist to allow us to  
 9 administer water rights after an impairment  
 10 has been shown, and those protections exist  
 11 today right now and they will remain in  
 12 place to protect any irrigator or domestic  
 13 user who is, in fact, impaired by the  
 14 City's water use under the proposal or at  
 15 any time. So it's the same with the MDS  
 16 argument that we heard a lot about more  
 17 recently. DWR will administer water rights  
 18 as necessary if and when MDS is impacted,  
 19 but we never preemptively deny water use  
 20 just because MDS might be impacted at some  
 21 point in the future.  
 22 I also want to point out that, in fact,  
 23 GMD2's governing regulations don't mention  
 24 MDS anywhere. And further taking --  
 25 further, and importantly, taking the

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1 approach that the District and the  
 2 Intervenor have seemed to advocate for in  
 3 this regard would actually discourage  
 4 development and the application of water to  
 5 beneficial use by all people of the state,  
 6 which again is contrary to the general  
 7 principles of Kansas water law. Of course,  
 8 I also do want to note that the City has  
 9 expressed throughout its willingness to  
 10 agree to MOU terms that would protect  
 11 nearby users as well.  
 12 So I also have a few points I want to  
 13 make on the topic of aquifer maintenance  
 14 credits specifically. First, as to the  
 15 proposed 120,000 acre-foot cap on recharge  
 16 credits, I want to point out, as I think  
 17 Mr. McLeod also did, that currently no cap  
 18 exists at all on the recharge credits that  
 19 the City is allowed to accumulate.  
 20 Also the City has projected a maximum  
 21 demand of 20,000 credits in the worst year  
 22 of a 1 percent drought, which is only a  
 23 small portion of the proposed overall cap  
 24 accumulation quantity of 120,000 acre-feet.  
 25 As I think Mr. McLeod also said, it's

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1 additionally important to remember that  
 2 once these credits are used -- are used,  
 3 they are gone. They don't renew every  
 4 year, so there is not a scenario in which  
 5 the City would take 120,000 acre-feet of  
 6 credits out of the aquifer in back-to-back  
 7 years. It's going to take a significant  
 8 amount of time to rebuild those credits.  
 9 So, again, the 120,000 acre-foot number  
 10 is a proposed overall cap for all credit  
 11 accumulation, not a representation of what  
 12 the City has proposed to or would ever need  
 13 to take out of the aquifer at any one time  
 14 or in any one given year. So DWR really  
 15 doesn't even necessarily feel that this  
 16 120,000 acre-foot number is all that  
 17 critical as each ASR well will still  
 18 continue to be governed by its annual  
 19 authorized quantity.  
 20 So I also want to emphasize that when  
 21 the City is pumping ASR credits, it is not  
 22 pumping native Equus Beds water. It is  
 23 pumping water that either originated as  
 24 surface water and came to be in the aquifer  
 25 through physical recharge, or if the

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1 proposal is approved, water that could have  
 2 originated as surface water and is treated  
 3 as surface water through the proposed  
 4 accounting adjustment.  
 5 So turning now to the issue of passive  
 6 recharge, I want to emphasize that it  
 7 remains DWR's position that passive  
 8 recharge is not and should not be allowed.  
 9 It is simply our view that what the City  
 10 has proposed here does not constitute  
 11 passive recharge and does fit within the  
 12 existing regulatory framework that governs  
 13 the ASR project. Water for which the City  
 14 accumulates AMCs under the proposal will  
 15 pass through Wichita's ASR diversion and  
 16 treatment infrastructure and will be  
 17 subject to the existing quantity and rate  
 18 limitations of those permits. So it is  
 19 therefore, in our opinion, not passive  
 20 recharge as it moves through that  
 21 infrastructure and it is permissible under  
 22 existing law.  
 23 Finally, I want to address the argument  
 24 that the District has made so much of that  
 25 this proposal will basically allow the City

1 to get two beneficial uses of water for  
2 one. On this point, I just want to  
3 emphasize that the City could right now,  
4 today, if it had the high surface water  
5 flows on the Little Ark necessary to do it,  
6 pump a hole in the aquifer, take that water  
7 to town, inject treated Little Ark surface  
8 water into the aquifer and then turn right  
9 around and pump that same water back out of  
10 the aquifer and also take it to town. All  
11 that the proposal really does as it  
12 pertains to AMCs is essentially just cut  
13 out the intermediate step of pumping the  
14 hole in the aquifer, which for the same  
15 reasons I discussed at the beginning of my  
16 remarks is beneficial for the health of the  
17 aquifer and for all water uses in the area.  
18 So now that I've kind of circled back to  
19 where I began, I'll conclude by saying that  
20 DWR has so far not seen anything that  
21 changes the agency's initial conclusion  
22 that the City's proposal is both reasonable  
23 and legal. With that being said, though,  
24 we are committed to conducting a thorough  
25 review of the voluminous record in this

1 water was referred to metaphorically  
2 through a bottle of water. Likewise,  
3 throughout this hearing, we heard that the  
4 Equus Beds Aquifer is that metaphorical  
5 box. So as a consequence, I have that  
6 gallon of water and I have a box  
7 representing the Equus Beds Aquifer.  
8 With physical recharge credits, the  
9 important piece is that a gallon of water  
10 is taken from the river and it's injected  
11 directly into the aquifer. And as you can  
12 see, that gallon of water which was  
13 injected into the aquifer is then available  
14 to take out at a later time. And so at  
15 that future point, the City can then take  
16 that gallon of water out and use it in town  
17 for municipal purposes.  
18 Now, let's fast-forward for a moment and  
19 talk about the aquifer maintenance credit  
20 approach. This same gallon of water will  
21 be taken directly from the Little Arkansas  
22 River and shipped off to the City of  
23 Wichita. As you can see, as we look in the  
24 aquifer, in this box, there's no gallon of  
25 water that's been put into the aquifer.

1 matter, and I will certainly expand on each  
2 of the points I've raised today in our  
3 post-hearing brief once we have had time to  
4 conduct such a review. Thank you.  
5 **PRESIDING OFFICER:** Thank you,  
6 Ms. Murray. Next, we have the Groundwater  
7 Management District, Dave or Tom, you're  
8 up.  
9 **MR. STUCKY:** Thank you, Your Honor.  
10 Obviously, this has been a long hearing and  
11 there's been a lot of testimony and a lot  
12 of evidence, and so I certainly agree with  
13 Mr. McLeod and Ms. Murray in that regard,  
14 and it's difficult to try and summarize  
15 positions in some brief closing arguments.  
16 However, I'll do my absolute best.  
17 Now, indeed, the District has a very  
18 different take than the -- what was just  
19 stated by the City or the Division of Water  
20 Resources. But before I delve into our  
21 many arguments in this case, I would like  
22 to start with a demonstration that I think  
23 is illustrative of the very heart of the  
24 District's position.  
25 Throughout this hearing, a gallon of

1 It's been shipped directly to the City of  
2 Wichita, yet somehow through some magical  
3 accounting, the City of Wichita will divert  
4 another gallon of water out of the aquifer  
5 at a later time. Somehow the City has  
6 created a two-for-one benefit through this  
7 accounting that they're able to do.  
8 So through this hocus-pocus, the City  
9 has doubled its quantity. Through its  
10 aquifer maintenance credit proposal, the  
11 City is attempting to perform a magic act  
12 by conjuring up new water and new water  
13 rights. So the City is asking you as the  
14 hearing officer to perform a metaphorical  
15 swish of your wand and allow for the  
16 prohibited concept of doubling a  
17 consumptive use and to bless a new concept  
18 prohibited by statutes and regulations. So  
19 this illustrates our overarching concern  
20 with the City's proposal.  
21 But, indeed, our concerns run much  
22 deeper than that. But before we get into  
23 all those concerns, I'd like to touch on a  
24 brief summary of our understanding of the  
25 City's proposed modification. First of

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1 all, with respect to aquifer maintenance  
 2 credits, the City is asking for a credit  
 3 for water left in storage that was not  
 4 placed there by the City in the first place  
 5 and is already dedicated to other water  
 6 users. Second of all, with respect to  
 7 lowering the minimum index level, the City  
 8 is proposing to do that anywhere from 9 to  
 9 23 feet depending on where in the aquifer  
 10 it's located. But, finally, and this  
 11 responds to some comments made by  
 12 Ms. Murray just a moment ago, it's  
 13 important to stress the City's proposed  
 14 modifications apply not only to existing  
 15 ASR Phase II permits but also could apply  
 16 to any future ASR permits obtained by the  
 17 City. Therefore, the City can accelerate  
 18 their withdrawal in the future.  
 19 But I'd also like to touch on another  
 20 comment that was raised by Ms. Murray just  
 21 a moment ago as far as what the City must  
 22 prove and what their burden of proof is.  
 23 And what's quite important in this case is  
 24 the fact that there's three orders that  
 25 govern this hearing. There were two that

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1 were signed by Mr. Barfield and there was  
 2 one that was signed by you as the hearing  
 3 officer. And in those orders it's quite  
 4 clear what is specified. It states in  
 5 those orders to meet its burden, the City  
 6 must establish that it, quote, can meet the  
 7 requirements set forth for aquifer storage  
 8 and recovery project in K.A.R. 5-12-1 and  
 9 the requirements set forth in K.S.A.  
 10 82a-708(b), including that the proposed  
 11 changes are reasonable and will not cause  
 12 impairment and that the proposed changes  
 13 relate to the same local source of supply.  
 14 Whether or not a change is reasonable  
 15 should consider the effect upon the public  
 16 interest, end quote.  
 17 In addressing impairment and the public  
 18 interest, these statutes that are  
 19 referenced in the orders further specify  
 20 the City's duty to show that its proposal  
 21 will not unreasonably interfere with  
 22 minimum desirable streamflow, undermine  
 23 safe yield, cause an unreasonable lowering  
 24 of the water table, and adversely impact  
 25 water quality. So the very orders that

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1 have been adopted in this case to govern  
 2 this hearing require the City to show those  
 3 elements. So to meet its burden of proof  
 4 by a preponderance of the evidence in this  
 5 case, the City must demonstrate that it can  
 6 meet all of those elements as outlined in  
 7 the specific orders adopted in this  
 8 hearing, contrary what the Division of  
 9 Water Resources argued just a moment ago.  
 10 So with this framework in mind that the  
 11 City must meet, we now move to a threshold  
 12 argument, and that threshold argument is  
 13 that there is no statutory or regulatory  
 14 mechanism for these proposed modifications.  
 15 As we indicated through our testimony,  
 16 there was no change application filed, and  
 17 there has been no new application filed in  
 18 this case, yet the City wants to change the  
 19 two most fundamental aspects of their  
 20 existing ASR permits.  
 21 First of all, the City wants to change  
 22 how recharge credits are accumulated and  
 23 retained, and, second of all, the City  
 24 wants to change how those credits can be  
 25 withdrawn at a later time. Those are the

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1 two most fundamental aspects of their  
 2 permits. The City is asking now to  
 3 retroactively change those aspects of their  
 4 permits, yet they have not filed a change  
 5 application or a new application.  
 6 Now, the Kansas Water Appropriation Act  
 7 does allow for some changes to water  
 8 permits, such as the place of use, the  
 9 point of diversion, the use made of water,  
 10 and some other minor changes, but these  
 11 changes by the City are outside the scope  
 12 of what can be changed. An analogy of this  
 13 would be in a zoning context. You can't go  
 14 to district court and pursue a zoning  
 15 change if no application is filed before  
 16 the governing body. Likewise, because the  
 17 City has not filed a change application or  
 18 a new application, their proposal is  
 19 facially invalid at the threshold.  
 20 But if we were to get beyond these  
 21 procedural hurdles, the next major concern  
 22 identified by the District has to do with  
 23 the City's modeling, starting with the  
 24 MODSIM modeling and the limitations with  
 25 drought modeling. We indicated that,

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1 number one, there's limitations to the  
2 Palmer Drought Severity Index; second of  
3 all, we indicated through testimony that  
4 there was a lack of historical local  
5 regional data to outline this drought  
6 modeling. But, finally, another concern  
7 identified was that there is no set  
8 1 percent drought scenario. It doesn't  
9 have to be eight years, for example, as the  
10 City modeled.  
11 But the concerns with the MODSIM  
12 modeling just really scratch the surface  
13 when it came to the concerns that the  
14 District identified with the MODFLOW  
15 modeling. First of all, the District  
16 identified errors in the tables that were  
17 proposed by the City. We showed that there  
18 were errors in tables such as 2-5, 2-10,  
19 and other errors that we identified in the  
20 modeling and throughout the proposal.  
21 Also, it was testified that there were  
22 potential errors in the input files that  
23 were utilized by the City.  
24 But, finally, the City's modeling fails  
25 to take into account crucial variables.

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1 For example, number one, the river flow  
2 drying up. Mr. McCormick admitted that the  
3 City's modeling didn't take into account  
4 the possibility that the Little Arkansas  
5 River or the Arkansas River could dry up,  
6 and as Kansans, we know that that's a  
7 distinct possibility. Mr. McCormick  
8 indicated that this modeling could have  
9 been performed but it would have been  
10 timely and expensive. Mr. Romero, on the  
11 other hand, said that this modeling could  
12 have been done with minimal additional  
13 effort and was a critical analysis that  
14 should have been performed by the City.  
15 But the second major concern or variable  
16 that wasn't taken into account was the fact  
17 that the City started with 1998 levels and  
18 was unable to demonstrate the defensibility  
19 of starting with this metric. So we are  
20 asking you as the hearing officer to ensure  
21 that shortcuts are not taken at the expense  
22 of the other water users of the aquifer.  
23 But with that in mind, there's one  
24 concept we agree with the City and the  
25 Division of Water Resources on, and that is

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1 that there should be a cap on the  
2 accumulation and withdrawal of physical  
3 recharge credits. Now, a moment ago,  
4 Ms. Murray also said that the cap of  
5 120,000, it doesn't really matter because  
6 it's limited based on how much you can  
7 withdraw per year. Now, although there is  
8 a limit on how much it can be withdrawn per  
9 year, we think the cap of 120,000 acre-feet  
10 does matter.  
11 Through the City's own testimony, they  
12 indicated that in an extreme drought  
13 scenario, the most they would need in  
14 addition to their native water rights is  
15 only approximately about 50,000 acre-feet,  
16 and so as a consequence, we're proposing to  
17 you that it makes sense to place the cap at  
18 50,000 acre-feet for the accumulation of  
19 physical recharge credit.  
20 But once we move beyond this concept of  
21 a cap, we come to the aquifer maintenance  
22 credit accounting methodology. What you  
23 heard in the testimony of our experts is  
24 that there's vast discrepancy between low  
25 and high water levels. The City's proposal

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1 used low, 1998 aquifer water levels, which  
2 minimized recharge credit loss and  
3 optimized AMC retention. In fact,  
4 Mr. McCormick, in his testimony when  
5 cross-examined by Ms. Wendling, indicated  
6 that this was the case.  
7 There was also, second of all, errors in  
8 calculating initial and gradational losses  
9 by the City. In the real world, the City  
10 is actually only retaining approximately  
11 64 percent of physical recharge credits  
12 from 2006 to 2016. And this was due to  
13 Mr. McCormick's testimony, not some sort of  
14 80 percent number which was identified just  
15 moments ago. In fact, in the testimony --  
16 testimony, Mr. McCormick brought out his  
17 calculator and calculated those exact  
18 figures and testified that 64 percent was  
19 the retention rate.  
20 But, furthermore, and so it's clear  
21 here, that actual physical recharge credit  
22 retention has been much lower than the AMC  
23 accounting proposal would like you to  
24 believe. But also the City's proposal is  
25 based on an annual accounting using January



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1 groundwater levels, which fail to take into  
 2 account peak pumping periods and water  
 3 table fluctuations throughout the year.  
 4 But these are some of our initial  
 5 threshold concerns with the City's  
 6 proposal. Now we delve into the heart of  
 7 our concerns, starting with the new minimum  
 8 index level. The first major argument that  
 9 we've identified has to do with the  
 10 legality of the City's approach of lowering  
 11 the minimum index level. It is the  
 12 District's position that the City has a  
 13 contractual commitment not to drop below  
 14 the 1993 levels. This contractual  
 15 obligation is shown through a memorandum of  
 16 understanding, permit conditions, and  
 17 promises made to domestic owners through  
 18 letters that induce the domestic owners to  
 19 concede to the spacing and consent waivers.  
 20 So, indeed, it's our position that the City  
 21 is contractually obligated not to lower to  
 22 a new bottom.  
 23 But moving beyond that, we come to an  
 24 argument we raised in our motion to dismiss  
 25 from the Clawson case. The Clawson case is

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1 black letter law in Kansas, and it says  
 2 that one can't retroactively change permit  
 3 conditions. So in other words, neither the  
 4 City, the Division of Water Resources, or  
 5 the District has the power to bless these  
 6 retroactive changes to permits.  
 7 I think it's important, to try and focus  
 8 us in on what matters here, to quote the  
 9 words of the Clawson case. The Clawson  
 10 case states directly, quote, in sum, KWAA  
 11 does not authorize the chief engineer to  
 12 reevaluate and reconsider an approval once  
 13 a permit has been issued. So in other  
 14 words, if the City hasn't filed a change  
 15 application or a new application, they  
 16 can't just retroactively change to a new  
 17 bottom or modify permit conditions.  
 18 But moving beyond that, we come to the  
 19 takings clause argument, and certainly the  
 20 Division of Water Resources spent a lot of  
 21 time attacking this takings clause argument  
 22 approach and talks about how water is  
 23 dedicated to all users and things of that  
 24 nature, which, of course, as the District,  
 25 we understand, we understand that well,

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1 because that's different from what our  
 2 position is in this case.  
 3 Our position is that water rights are  
 4 real property rights, and if those are  
 5 infringed upon, it can constitute a taking.  
 6 Likewise, if you have an expectation to the  
 7 value of your land and that value is  
 8 undermined, that likewise interferes with a  
 9 property interest, and that's what we heard  
 10 here. We heard the testimony of landowners  
 11 that identified significant value of their  
 12 land and their water rights. They  
 13 indicated their investment expectation to  
 14 that future use. The City's proposal  
 15 threatens to undermine that viability  
 16 through extreme water withdrawals that will  
 17 drop the water table to a new harmful level  
 18 and interfere with water quality. The  
 19 taking of water is based on water the City  
 20 doesn't own and, we agree with DWR, was not  
 21 placed there by the City in the first place  
 22 and is dedicated to other water users.  
 23 This is a textbook takings clause  
 24 violation.  
 25 But moving beyond the takings clause,

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1 the next concern we have with lowering the  
 2 minimum index level has to do with spacing  
 3 waivers. These permits, in short, don't  
 4 meet spacing. The old ASR physical  
 5 recharge credit permits were granted based  
 6 on knowledge that water would be added to  
 7 the aquifer and the water levels wouldn't  
 8 be dropped below the 1993 levels.  
 9 The City's October 10, 2008 letter to  
 10 the Groundwater Management District board  
 11 requested the spacing waivers for Phase II  
 12 applications specifically be conditioned on  
 13 the fact that water would not be withdrawn  
 14 below the 1993 levels. These conditions  
 15 aren't present with aquifer maintenance  
 16 credits or the revised minimum index  
 17 levels. As a consequence, any of these  
 18 spacing waivers that were granted in the  
 19 past are now irrelevant and the City's new  
 20 approach does not meet spacing. Yet  
 21 another easy threshold reason why this  
 22 proposal must be denied.  
 23 But moving beyond spacing, we've come to  
 24 safe yield, a very, very important concept,  
 25 again, based on the three orders adopted in

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1 this case, an issue that must be resolved  
2 by you as the hearing officer. Indeed, it  
3 is our position that the City's idea of  
4 lowering to a new minimum index level  
5 simply does not meet safe yield. K.A.R.  
6 5-3-9(b) states that unless otherwise  
7 provided by regulation, it shall be  
8 considered to be in the public interest  
9 that only the safe yield of any sources of  
10 water supply shall be appropriated.  
11 Existing ASR permits are exempt from  
12 safe yield regulation; however, it is our  
13 position that the proposed AMCs, in  
14 conjunction with lowering the minimum index  
15 levels, are not exempt. You may recall  
16 that Mr. Boese calculated the safe yields  
17 of all 30 of the City's existing permits  
18 and the City's dismissed permits, none of  
19 them met safe yield. As you heard, some of  
20 them were over-appropriated up to four  
21 times over. Moreover, no new permits,  
22 except for the City's ASR permits and  
23 perhaps some temporary or small use  
24 permits, have been approved in the Wichita  
25 well field area for over four decades

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1 because it is so heavily appropriated.  
2 Lowering to a new minimum index level  
3 infringes upon the very concept of safe  
4 yield.  
5 But moving beyond some of these initial  
6 concerns, which are plenty of grounds to  
7 deny the City's proposal, we come to the  
8 practical effect of lowering to a new  
9 minimum index level. First of all, the  
10 effect to minimum desirable streamflow. We  
11 produced extensive modeling and testimony  
12 from Dave Romero and others indicating the  
13 drastic effects of withdrawing accumulated  
14 credits below the 1993 levels. On the  
15 other hand, the City didn't do any modeling  
16 in that regard, even though the City was  
17 obligated to pursuant to the governing  
18 statutes and regulations. So, indeed, you  
19 have the District's testimony here showing  
20 that dropping to a new minimum index level  
21 has the certain effect of interfering with  
22 minimum desirable streamflow.  
23 But the next major concern has to do  
24 with water quality. The District and the  
25 Intervenor presented evidence that

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1 lowering the minimum index level could  
2 result in the harmful spread of chloride,  
3 arsenic, and other harmful contaminants.  
4 Once again, the City failed to model this  
5 at all, even though it is a legal  
6 requirement of K.S.A. 82a-711, which is  
7 incorporated through those orders I cited  
8 earlier.  
9 In addition to the previous  
10 considerations, there are major public  
11 interest concerns with dropping to a new  
12 bottom. You heard that there are two types  
13 of impairment, there's direct well-to-well  
14 impairment and there's also the impairment  
15 to the overall health of the aquifer.  
16 Mr. Romero in his testimony indicated that  
17 both types of impairment will occur if you  
18 adopt the City's proposal. He indicated  
19 that individual wells will be impacted by  
20 dropping to a new minimum index level, and  
21 he also talked about how it would interfere  
22 with the overall health of the aquifer.  
23 But you may also recall that there was a  
24 lot of discussion about saturated thickness  
25 versus practical saturated thickness. You

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1 heard the testimony on practical saturated  
2 thickness, and the reality was that when  
3 you look at the well logs and the actual  
4 data, there's simply just not as much water  
5 in the aquifer as the City would like you  
6 to believe. In fact, Mr. Letourneau and  
7 Mr. Boese both testified as to this concern  
8 when they looked at the actual well logs.  
9 Mr. Boese presented hydrographs of the  
10 drastic effects that would occur if we  
11 dropped to a new minimum index level on the  
12 practical saturated thickness.  
13 So in sum on minimum index levels, the  
14 City's cursory modeling shows general  
15 impacts during a -- during a 1 percent  
16 drought to water levels by index cell but  
17 is not specific to well locations and  
18 doesn't take into account the practical  
19 saturated thickness. Mr. Letourneau  
20 recommended that in the future this actual  
21 well data and practical saturated thickness  
22 should be taken into account. Indeed, this  
23 should be done before the City's proposal  
24 is approved. So for all these reasons, the  
25 minimum index level should not be lowered.

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1 But moving beyond the minimum index  
 2 level concerns, we come to the concept of  
 3 aquifer maintenance credits. Aquifer  
 4 maintenance credits, a term that is not  
 5 defined by statute or regulation. In fact,  
 6 aquifer maintenance credits are  
 7 specifically prohibited by statutes and  
 8 regulations.  
 9 There was a detailed statutory analysis  
 10 provided by Mr. Boese and Mr. Pope. As  
 11 they indicated, all definitions refer to  
 12 physical artificial recharge of the aquifer  
 13 to accumulate credits. The very definition  
 14 of, quote, aquifer storage and recovery  
 15 system found in regulation specifies that  
 16 artificial recharge must occur and that  
 17 source water is stored for subsequent  
 18 recovery.  
 19 Artificial recharge is defined as the  
 20 use of source water to artificially  
 21 replenish the water supply of the aquifer.  
 22 Source water is defined, in part, as the  
 23 above base flow stage in the river.  
 24 Accounting is defined, in part, as -- as  
 25 taking into account the water entering and

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1 leaving the aquifer. The water is to be  
 2 used for subsequent appropriation and  
 3 refers to water being put in the  
 4 unsaturated portion of the aquifer. The  
 5 City, on the other hand, wants to divert  
 6 water directly to the City when the aquifer  
 7 is already fully saturated, contrary to  
 8 these very definitions.  
 9 Consequently, AMCs cannot be part of an  
 10 aquifer storage and recovery system because  
 11 the main component of artificial recharge  
 12 is missing. The source water is not placed  
 13 in the aquifer to artificially replenish  
 14 the aquifer, and no source water is stored  
 15 in the aquifer for subsequent recovery.  
 16 Mr. Boese and Mr. Pope, who have dedicated  
 17 their careers to analyzing these statutes  
 18 and regulations, both indicated that AMCs  
 19 are prohibited.  
 20 But a moment ago we also heard mention  
 21 of the concept of functional equivalent.  
 22 Once again, functional equivalent, a  
 23 definition not found in statute or  
 24 regulation, a definition or a concept as  
 25 applied to aquifer maintenance credits that

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1 is a mere figment of the City's  
 2 imagination, again, not blessed by Kansas  
 3 water law.  
 4 But we move beyond that to the concept  
 5 of passive recharge credits. David Pope  
 6 defined passive recharge credits as water  
 7 the City could have pumped but didn't.  
 8 David Pope provided a detailed analysis of  
 9 what storage meant as he arrived at his  
 10 conclusion. Passive recharge credits were  
 11 prohibited based on representations made by  
 12 the City and the prior orders of the chief  
 13 engineer. Indeed, the Division of Water  
 14 Resources just indicated a moment ago that  
 15 their position is still against passive  
 16 recharge credits.  
 17 Specifically, passive recharge credits  
 18 were also prohibited in both ASR Phase I  
 19 and Phase II approval orders of the chief  
 20 engineer. David Pope emphasized that the  
 21 City's aquifer maintenance credit concept  
 22 is nothing more but rank passive recharge  
 23 credits. Even Mr. Pajor, in  
 24 cross-examination, finally agreed that  
 25 nobody should get credit for water not

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1 pumped.  
 2 But moving beyond the concept of passive  
 3 recharge credits, we come to the Kansas  
 4 Water Appropriation Act and the very heart  
 5 of this act, which is the concept of first  
 6 in time, first in right. The City's  
 7 aquifer maintenance credit proposal, to  
 8 make no mistake, will violate this very  
 9 core principle of this statute that we --  
 10 that we all hold so dear.  
 11 This was proven by various testimony of  
 12 landowners and the District's experts that  
 13 demonstrated that the City's attempts to  
 14 withdrawal water it didn't place in the  
 15 aquifer in the first place is junior to the  
 16 rights of other water users in a very  
 17 over-appropriated portion of the aquifer.  
 18 Aquifer maintenance credits allow the City  
 19 to withdraw that water out of the aquifer  
 20 at a later time based on water that was  
 21 never injected there in the first place and  
 22 so that water taken out has to be  
 23 infringing upon more senior water users in  
 24 the aquifer, violates the very heart of the  
 25 Kansas Water Appropriation Act.

1 But moving beyond these threshold  
2 concerns, we come to the practical effects,  
3 once again, of the AMC approach. Again,  
4 similar to minimum -- to lowering to a new  
5 minimum index level, we have the impacts on  
6 minimum desirable streamflow. You heard  
7 testimony that additional withdrawals of up  
8 to 120,000 acre-feet of water over a  
9 designated period of time could have dire  
10 impacts. There was lots of graphs and  
11 statistics and modeling from our experts,  
12 including Mr. Romero, that indicated that  
13 this is a dire concern if these are  
14 withdrawn over a period of time.  
15 Although the annual withdrawal is,  
16 indeed, capped as was identified a moment  
17 ago, these -- the City could seek more  
18 permits in the future and only accelerate  
19 that withdrawal as time goes on, and that  
20 was also testified to. Various experts,  
21 indeed, from the District side testified to  
22 the drastic consequences to minimum  
23 desirable streamflow when these credits are  
24 withdrawn. The City, on the other hand,  
25 failed to model this at all, despite its

1 exempt from safe yield; however, the  
2 proposed AMCs do not place any water into  
3 the aquifer for storage nor add to the  
4 water supply, therefore, AMCs would not  
5 qualify for safe yield exemption, and they  
6 violate this very principle.  
7 But, again, we come to the concept of  
8 saturated thickness, and you may recall  
9 that there were hydrographs presented both  
10 to the impacts to minimum -- I'm sorry, to  
11 lowering to a new minimum index level but  
12 also the impacts to AMCs and withdrawing  
13 AMCs. Saturated thickness will also be  
14 interfered when we withdraw these aquifer  
15 maintenance credits. Again, the actual  
16 data and the actual well logs paint a dire  
17 picture. There is not as much water in the  
18 aquifer in these areas as the City would  
19 like you to believe through its modeling.  
20 Again, a major concern with aquifer  
21 maintenance credits.  
22 But the next major concern has to do  
23 with the impact to the public interest.  
24 Again, you heard that there were multiple  
25 forms of impairment that were identified by

1 statutory obligation to do so.  
2 But moving beyond the impacts to minimum  
3 desirable streamflow, we come to the  
4 concept of water quality. Various experts  
5 from the District indicated that  
6 withdrawing a massive amount of accumulated  
7 credits could be drastically adverse --  
8 have drastically adverse impacts to water  
9 quality. Once again, and we have a common  
10 theme here, the City failed to model this  
11 at all and did not present any testimony as  
12 to the impacts to water quality of  
13 withdrawing these accumulated credits.  
14 But moving beyond water quality and  
15 concerns with water quality and the sole  
16 evidence provided by the Intervenors and  
17 the District on these elements, we come  
18 again to the concept of safe yield. Again,  
19 this is a horribly over-appropriated area  
20 of the aquifer that we're talking about.  
21 Withdrawing credits takes water out of the  
22 aquifer that was never placed there by the  
23 City in the first place and thus violates  
24 safe yield. As indicated, an aquifer  
25 storage and recovery permit application is

1 Mr. Romero. First of all, he said that  
2 withdrawing AMCs would cause impairment to  
3 individual wells, and he said that was a  
4 near -- nearly a certainty, and he also  
5 said that it would interfere with the  
6 overall health of the aquifer. Again,  
7 Mr. Romero, through detailed analysis, a  
8 very, very credentialed expert, indicated  
9 that it's not just a remote possibility but  
10 a near certainty that well-to-well  
11 impairment and overall health of the  
12 aquifer will be adversely impacted.  
13 In fact, the City actually acknowledged  
14 that this may be a possibility, and through  
15 the testimony of Mr. Clement indicated  
16 that, you know, if we interfere with  
17 individual wells, we could simply drill  
18 some deeper wells in the future. However,  
19 you also heard some testimony of those very  
20 familiar with drilling wells who indicated  
21 that it could take weeks, months, or much  
22 longer for these wells to be drilled, a  
23 dissatisfying remedy at best.  
24 But moving beyond those concerns, we  
25 come, again, to the concept of a double

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1 benefit. I demonstrated just a moment ago  
 2 how it creates a two-for-one on gallon  
 3 while tapping into a completely undefined  
 4 source of water. You know, if this was a  
 5 tort case, which it's not, and we  
 6 understand that, we would argue concepts  
 7 such as equitable estoppel, conversion,  
 8 unjust enrichment, among many other  
 9 concepts to defeat the City's proposal.  
 10 But, indeed, here the point is still clear,  
 11 the City is doubling their consumptive use.  
 12 We also argued through testimony that this  
 13 is a new type of consumptive use and also a  
 14 new, undefined source of water. So for all  
 15 of those reasons, I think it is painfully  
 16 obvious that aquifer maintenance credits  
 17 cannot be allowed.  
 18 Although the City may argue and has  
 19 argued that they desperately need this  
 20 proposal for future water planning,  
 21 alternatives for drought planning do exist  
 22 for the City, such as multi-year flex  
 23 accounts. The City could simply operate  
 24 under the same rules and the same playing  
 25 field as everybody else. Again, there's no

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1 hate towards the City, as was identified  
 2 previously; we're just simply asking that  
 3 the City operate under the same multi-year  
 4 flex accounts that are utilized by the  
 5 other water users in the aquifer.  
 6 So undeniably for all of these reasons,  
 7 we don't think the City's proposal should  
 8 be granted, as it is facially illegal and  
 9 invalid, relies on voodoo science, and will  
 10 have drastic impacts to the aquifer and the  
 11 other users that rely on this vital  
 12 resource.  
 13 However, in the event that this was  
 14 somehow entertained for approval, which it  
 15 clearly should not be, there would need to  
 16 be extensive, additional modeling performed  
 17 by the City and detailed, carefully crafted  
 18 permit conditions as testified to by the  
 19 Division of Water Resources, the City, and  
 20 the District, and, indeed, those detailed  
 21 permit conditions were outlined in great  
 22 detail in the hearing and will be further  
 23 briefed. It would also require a statutory  
 24 and regulatory change before the City's  
 25 proposal could be approved. Thus it merits

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1 mentioning once again that the City has no  
 2 standing to pursue its proposal at this  
 3 point in time.  
 4 So as I conclude my remarks, we circle  
 5 back to the magic act being sought by the  
 6 City. In the words of David Pope, aquifer  
 7 maintenance credits are, quote, fictitious  
 8 credits. These credits are a mere figment  
 9 of an abstract imagination by the City.  
 10 The City should not be allowed to pursue  
 11 these phantom credits through a crafty and  
 12 elaborate bait and switch mockery of  
 13 current law. Mark Twain once prophetically  
 14 quipped, whiskey is for drinking and water  
 15 is for fighting for.  
 16 Among many concerns, lowering the  
 17 minimum index levels and allowing the City  
 18 to accumulate and withdraw aquifer  
 19 maintenance credits creates the ominous and  
 20 overwhelming probability of adversely  
 21 impacting other groundwater users, water  
 22 quality, and minimum desirable streamflow.  
 23 The City has not met its burden of proof on  
 24 any of these categories.  
 25 So, indeed, as the District, we feel the

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1 overarching responsibility to battle for,  
 2 defend, and protect the critical resource  
 3 known as the Equus Beds Aquifer.  
 4 Consequently, we are vigorously opposed to  
 5 the illusionary trick represented by the  
 6 City's proposal.  
 7 I would also like to reserve 20 minutes  
 8 for rebuttal.  
 9 **PRESIDING OFFICER:** Okay, thank you.  
 10 Ms. Wendling.  
 11 **MS. WENDLING:** Thank you. I will do  
 12 my best as well as everyone else to keep my  
 13 comments brief and reserve details for the  
 14 future brief.  
 15 We believe the City has failed to meet  
 16 its burden of proof in that these proposed  
 17 changes are reasonable, will not cause  
 18 impairment, and are in the public interest.  
 19 The City's proposal includes a simulated  
 20 drought with carefully selected inputs as  
 21 justification for wanting additional water  
 22 rights. The simulation analyzes only the  
 23 impact of the carefully curated model  
 24 stress period. The requested index levels  
 25 and the 120,000 acre-feet in AMCs are not

1 inputs considered in the model. Far more  
2 study and analysis is needed to counter the  
3 decades of being told the aquifer is  
4 over-appropriated and it's not safe to go  
5 below the 1993 levels.  
6 For example, what if we don't enter the  
7 drought at the 1998 starting levels  
8 selected by the City for their model? Per  
9 the City, the '98 levels were selected  
10 because they were the best match for  
11 representing groundwater levels required to  
12 maintain the 30 million gallons daily of  
13 physical ASR recharge capacity. The City  
14 does not claim the '98 levels represent an  
15 average aquifer level or any reason  
16 whatsoever that the '98 levels should be  
17 the starting point, other than if it had --  
18 if the aquifer had remained at '98 levels,  
19 the ASR project would have performed as  
20 expected. The absence of any scenarios  
21 other than the single scenario supporting  
22 the City's request is troubling for those  
23 of us who rely exclusively on the Equus  
24 Beds for water.  
25 The City's analysis did provide

1 Equus Beds is a shared resource in a very  
2 heavily concentrated area of water users.  
3 The City's proposing an excessive drain on  
4 this limited resource at a time when the  
5 resource is at its most valuable. This is  
6 a very real world concern impacting Equus  
7 Beds water users not only during a  
8 potential drought but for an unspecified  
9 period of time following the drought.  
10 No data has been provided on the length  
11 of time it will take the Equus Beds to  
12 recover from the proposed pumping of AMCs  
13 during the 1 percent drought or going down  
14 to below the 1993 levels. These harms and  
15 risks are not merely speculative. Knowing  
16 that these additional uses of water will  
17 occur during a drought makes it even more  
18 likely that these harms would occur. The  
19 City's proposal does not limit the use of  
20 this additional water to times of drought,  
21 and they are seeking permission to take  
22 these additional credits to lower levels  
23 whenever they would like to.  
24 As Mr. Stucky has said, the AMCs are not  
25 provided for under Kansas water law. And

1 simulated groundwater levels and average  
2 saturated thickness for index cells during  
3 year eight of the simulated drought.  
4 Unfortunately, as Mr. Stucky just  
5 described, it does not provide information  
6 on the accessibility and availability of  
7 quality water for human use at actual well  
8 locations. These simulated groundwater  
9 levels provide no indication regarding  
10 quality of water or the impacts on known  
11 potential contaminants.  
12 There is a large gap between the credit  
13 usage modeled in the simulated drought and  
14 what the City is seeking with the proposal.  
15 For example, the City is seeking credits  
16 that would cover them during two  
17 back-to-back, 1 percent droughts, yet has  
18 only modeled a single drought. Further  
19 analysis is clearly needed to show the  
20 impacts of the City's proposal.  
21 The expert testimony has shown the very  
22 real possibility that the modifications  
23 requested by the City would unreasonably  
24 lower the water level, negatively impact  
25 streamflow, and harm water quality. The

1 although the City's proposal presents  
2 this as a modification to ASR permit, the  
3 AMCs in actuality have nothing to do with  
4 ASR. Just as water currently diverted from  
5 the Little Arkansas River, treated and used  
6 directly by the City is currently performed  
7 under the existing permit, it does not make  
8 that activity ASR activity. Nor is the  
9 recharge -- nor is the recharge credit a  
10 functional equivalent of a recharge credit,  
11 and it should not be allowed.  
12 Ultimately, the City's request for AMCs  
13 is a request to appropriate groundwater  
14 from an over-appropriated region of the  
15 aquifer. The City's proposal is a request  
16 for a new appropriation and should be  
17 treated as a new appropriation, following  
18 the procedures and safeguards established  
19 for such new applications, including safe  
20 yield analysis. If it has been determined  
21 that the aquifer is not fully  
22 over-appropriated and it is in the public  
23 interest to grant new appropriations, due  
24 process requires that all previously denied  
25 applications be reconsidered prior to this

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1 request from the City.  
 2 The AMCs being requested are to meet a  
 3 speculative future need. If storage and  
 4 drought mitigation are to be added as  
 5 beneficial uses, those new uses should  
 6 similarly be made available to all water  
 7 users. As Mr. Carp testified, the missed  
 8 economic opportunities of denying the  
 9 applications for decades due to an  
 10 over-appropriated aquifer to the entire  
 11 community cannot be ignored in now  
 12 determining that almost 120,000 acre-feet  
 13 of water is available to appropriate to the  
 14 City in this new form of credits. Unlike  
 15 local users of the Equus Beds with return  
 16 flows recharging the aquifer, the City  
 17 wants the new appropriation to export water  
 18 out of the Equus Beds in a fully  
 19 consumptive use with no benefit to the  
 20 Equus Beds.  
 21 The creation of AMCs for leaving water  
 22 in the aquifer is a very dangerous  
 23 precedent. Water users across the state  
 24 regularly leave water in the aquifer and  
 25 invest their own funds to conserve water

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1 now suddenly available for appropriations.  
 2 The aquifer drawdown caused by the use  
 3 of AMCs and lowered index levels is likely  
 4 to accelerate chloride contamination from  
 5 both the Burrton chloride plume and the  
 6 Arkansas River. This chloride  
 7 contamination could cause significant  
 8 economic harm, destroying the value of  
 9 productive cropland and homes of those  
 10 currently relying on the Equus Beds.  
 11 My clients and many others, including  
 12 local communities, have invested in the  
 13 land, their homes, businesses, irrigation  
 14 systems, conservation efforts, soil  
 15 improvement, livestock, farm equipment,  
 16 local co-ops, grain elevators, other  
 17 ag-supported businesses, and many other  
 18 items which depend on the availability of  
 19 quality water under existing and  
 20 long-standing water appropriation rights.  
 21 A new appropriation in the form of AMCs or  
 22 the removal of protective measures such as  
 23 the minimum index levels must not be  
 24 allowed to impair, harm, or interfere with  
 25 those rights. The burden of proving this

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1 and leave increasingly more water in the  
 2 Equus Beds.  
 3 The 1993 minimum index levels were  
 4 agreed on as a protective measure and the  
 5 result of extensive negotiations. The City  
 6 is now seeking to lower these protective  
 7 levels without evaluating the impact of  
 8 such a change on water users and the  
 9 sustainable health of the aquifer and  
 10 cannot be allowed.  
 11 As mentioned, the Equus Beds is fully  
 12 appropriated, and those property rights  
 13 belong to multiple individuals, including  
 14 my clients, the City of Wichita, and many  
 15 others. By skipping the recharge process,  
 16 the City seeks to convert the fully  
 17 appropriated native water in the aquifer to  
 18 recharge water dedicated exclusively to the  
 19 City of Wichita. This is simply a  
 20 physically -- physical taking of water that  
 21 has been appropriated to others. Decades  
 22 of denied permit applicants show that water  
 23 in the Equus Beds has been fully  
 24 appropriated. Those previously denied  
 25 applications cannot be ignored if water is

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1 potential impairment should not fall on  
 2 local residents, and the potential for  
 3 impairment should be considered before  
 4 making a decision to grant such a large  
 5 appropriation of water.  
 6 The City has claimed that the proposal  
 7 is only about the accumulation of credits  
 8 and not the use of those credits. However,  
 9 to consider the public interest, we have to  
 10 contemplate the withdrawal of these credits  
 11 from the aquifer. When it comes to such a  
 12 large appropriation, mistakes and  
 13 miscalculations can be disastrous.  
 14 The City attributes the full state of  
 15 the aquifer to implementation of the  
 16 Integrated Local Water Supply Plan in 1993.  
 17 This was ten years prior to the City  
 18 applying for Phase I of the ASR project in  
 19 2003 and 20 years before Phase II was  
 20 implemented in 2013. Why after 20 years  
 21 wasn't the City aware of the issues of a  
 22 full aquifer?  
 23 The limitations of the ASR project are  
 24 not new and the dilemma facing the City  
 25 today could have been ascertained by the

1 City long before this proposal and before  
2 investing over \$200 million in ASR. A  
3 reasonable person considering the public  
4 interest has to question whether we can  
5 rely on the City and their same experts who  
6 either invested such a large sum while  
7 failing to consider their own impact on the  
8 aquifer that they control or knowingly  
9 invested the money in the project with full  
10 knowledge of this limitation.  
11 My clients rely exclusively on the Equus  
12 Beds and do not have duplicate sources of  
13 water as the City of Wichita has. They are  
14 very concerned about the actual impact  
15 these modifications will have on the Equus  
16 Beds and them personally when the City  
17 withdraws the AMCs or draws down the  
18 aquifer to the new lowered level. A  
19 thorough analysis of multiple possible  
20 scenarios with an independent review is  
21 necessary to prevent irreversible damage.  
22 What are the impacts of allowing AMCs  
23 without performing recharge? Water  
24 right -- water right holders throughout the  
25 state leave water in storage when they do

1 way from pumping a hole that they have  
2 threatened to pump over the past several  
3 years.  
4 These past few days of extreme weather  
5 have demonstrated that even the best laid  
6 plans can go awry. Planning for extreme  
7 events such as drought are necessary, and  
8 the public can benefit from such planning.  
9 Access to essential water during a severe  
10 drought is important for everyone. But  
11 awkwardly modifying an ASR permit to create  
12 a fictitious credit and allow the recovery  
13 of water without performing recharge is not  
14 the right solution.  
15 I hope that we can find a solution that  
16 fits within the constraints of Kansas water  
17 law to address drought planning for the  
18 people of the State of Kansas. However, at  
19 this time, we believe the City's proposed  
20 modifications should be denied. Thank you.  
21 **PRESIDING OFFICER:** Thank you. I  
22 think at this time, it might be appropriate  
23 to take a ten-minute break, and then we'll  
24 return for rebuttal arguments. So for now,  
25 we will be off the record.

1 not pump their full appropriation, invest  
2 in water conservation, and other efforts to  
3 conserve water. Can these water right  
4 users also get a future credit for water  
5 left in storage, and if that is allowed  
6 what is the long-term impact? The  
7 questions still need to be answered before  
8 a decision can properly be made regarding  
9 this proposal. As Mr. Stucky said,  
10 extensive further analysis is necessary.  
11 Now, the City has presented the very  
12 really -- very real risks identified in  
13 this process of the City pumping their  
14 native groundwater rights. This is a very  
15 real risk and something that has been  
16 avoided due to the City's luxury of having  
17 multiple water resources and their  
18 management of the Equus Beds.  
19 Understanding that past appropriation  
20 decisions have already created a serious  
21 problem is not a reason to grant additional  
22 water rights that would exacerbate the  
23 problem. The City's proposal does not  
24 include a limit to prevent pumping of  
25 native water rights or prevent them in any

1 (Thereupon, a recess was taken;  
2 whereupon, the following was had.)  
3 **PRESIDING OFFICER:** After a short  
4 break, we are now back on the record. And  
5 we have had closing arguments from all  
6 counsel and now we move to the time that  
7 they have each reserved for rebuttal.  
8 They've each reserved 20 minutes, and we  
9 will start with Brian McLeod for the City.  
10 **MR. MCLEOD:** Thank you. Of the  
11 many, many points stated by counsel for the  
12 District and for Intervenors, there were a  
13 lot of them that seemed legally or  
14 factually mistaken, but we won't respond to  
15 all of them this morning in the time  
16 permitted, having to be selective.  
17 On the point that there could be later  
18 ASR Phase II wells and that the City could  
19 accelerate -- accelerate withdrawals in the  
20 future via additional wells, obviously, you  
21 know, any such additional wells would have  
22 to be permitted and would go through the  
23 process, hearing process for permitting,  
24 and any issues with problems arising from  
25 any impacts of those wells would be studied



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1 in that process. That's not really a  
 2 concern.  
 3 As far as what the City is required to  
 4 show by the hearing orders, I rather concur  
 5 with counsel for DWR's remarks that the  
 6 City has met those burdens, showing really  
 7 benefit in all relevant periods and  
 8 slight -- slight detriment only in the  
 9 occurrence of the modeled eight-year  
 10 drought, which is still offset by benefits  
 11 even in that period.  
 12 I don't agree with counsel's contention  
 13 that there is any unreasonable lowering of  
 14 the water table. I think counsel's casting  
 15 of the Balleau modeling as showing dire  
 16 consequences for minimum desirable  
 17 streamflow and the water table and the  
 18 impacts on wells is just not an accurate  
 19 characterization of the Balleau modeling.  
 20 And really if you look at the Balleau  
 21 modeling, it confirms that the impact of  
 22 the new index levels are slight; the  
 23 effects on individual wells, slight; the  
 24 effects on the water table, slight. So  
 25 just no factual foundation for all of those

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1 statements that have been -- that have been  
 2 allegedly based on that modeling.  
 3 It's also curious that the -- that we're  
 4 raising this notion of minimum desirable  
 5 streamflow in a time of drought. You know,  
 6 I think when Mr. Austin was testifying, he  
 7 recognized that even in realtime, even in  
 8 the context of administration, DWR will --  
 9 will let MDS issues go sometimes for a  
 10 period of several years to see if there is,  
 11 you know, really a persisting problem  
 12 versus some transitory condition. And,  
 13 particularly, you would expect that in time  
 14 of drought when you're not going to meet  
 15 minimum desirable streamflow no matter  
 16 what. It's -- it's not a rational  
 17 argument, it's just not, and it doesn't  
 18 comport with water rights practice or DWR's  
 19 historic treatment of minimum desirable  
 20 streamflow issues.  
 21 I think that there have been, if I'm not  
 22 mistaken, past changes actually to the ASR  
 23 permit, to the minimum index levels, some  
 24 corrections, and there have been other  
 25 minor changes, and I disagree with

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1 counsel's characterization that these  
 2 changes are just so great that they don't  
 3 fit within a scope of permissible changes  
 4 that can be made without a new application  
 5 or a change application.  
 6 The AMCs are not a major change. They  
 7 are, as former Chief Engineer Barfield  
 8 said, the functional equivalent of the  
 9 existing physical recharge credit.  
 10 Likewise, and for all the same reasons the  
 11 physical recharge credits don't affect fair  
 12 yield modeling, the AMCS will not affect  
 13 fair yield modeling, they will not have any  
 14 impact on fair yield, and that argument  
 15 is -- is not a well-founded argument.  
 16 Also the index levels, that is a slight  
 17 change, and I believe that the Balleau  
 18 modeling itself shows that the impacts are  
 19 also very slight, with perhaps six domestic  
 20 wells affected. And as to terming that as  
 21 some kind of dire impairment, it -- it  
 22 isn't. A momentary impact on wells, it can  
 23 be extended, it's not an impairment, it  
 24 hasn't been treated as an impairment in  
 25 Kansas water rights practice. And -- and

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1 there may be some momentary inconvenience,  
 2 that is -- that is possible, and it's  
 3 something the City would, of course,  
 4 attempt to cooperate to avoid, if possible,  
 5 but that is still not an impairment.  
 6 And the -- the results, the modeling  
 7 results from Mr. Romero's study are simply  
 8 not being accurately represented by  
 9 counsel, they don't show what they're being  
 10 claimed to show at all. And actually it  
 11 was good that Balleau did that modeling  
 12 because it helps to support the City's  
 13 proposal and provide additional reasons,  
 14 showing a slight impact even in the drought  
 15 scenario, that favored granting the  
 16 proposed modifications.  
 17 With respect to the idea that the City  
 18 should be capped at 50,000 acre-feet  
 19 because that's what the City should need in  
 20 a single modeled eight-year drought, that  
 21 doesn't really make sense. If the City has  
 22 injected or accrued AMCs in a much larger  
 23 amount, the City should be allowed to do  
 24 that for back-to-back eight-year droughts  
 25 as a conservative safeguard if it chooses.

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1 The 120,000 acre-foot cap, whether the  
2 District likes it or not, is more of a cap  
3 than there has ever been and was the City's  
4 suggestion to begin with, not something  
5 that was proposed by the District  
6 ab initio.  
7 As for the differences between --  
8 between Mr. Austin's work and  
9 Mr. McCormick's work being termed errors by  
10 counsel, they're not errors, and it's --  
11 it's clear from Mr. McCormick's testimony  
12 that the leakage variant, for example,  
13 between actual leakage and physical  
14 recharge and the leakage assumptions that  
15 are used for AMCs are very purposeful;  
16 there's a reason for using them, and  
17 Mr. McCormick explained those in his  
18 testimony, and they -- it's just not true  
19 to say that he made errors. He is  
20 employing different assumptions. As the  
21 same is true for his initial loss and the  
22 other variances, if you compare the two  
23 reports, you'll see that Mr. McCormick's  
24 numbers are different because he's not  
25 using the same methodology or approach as

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1 Mr. Austin, but it's not because he's  
2 making a mistake.  
3 With respect to the contractual  
4 obligation argument about a guaranteed 1993  
5 floor, there has never been any agreement  
6 in any context to guarantee a 1993 floor.  
7 In fact, it's abundantly clear in every  
8 context that the City can go below that  
9 with its 40,000 acre-foot native rights at  
10 any time and, in fact, had the City not  
11 reversed its management policies in 1993,  
12 levels in the aquifer would have gone below  
13 the 1993 levels. The only reason they  
14 didn't was the City's change in practice.  
15 And that's why the 1993 levels are  
16 preserved today at the historic lows.  
17 With respect to the MOU, we feel that  
18 that document has been effectively  
19 abandoned by the District because there  
20 were requirements in the MOU for periodic  
21 evaluation and revision of the document and  
22 simply that process never occurred,  
23 reflecting that the District didn't follow  
24 up on the conditions to adjust that  
25 document and perpetuate it over the long

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1 term.  
2 With respect to the spacing waivers  
3 argument, those waivers, I believe, were  
4 approved by DWR. There is no principle by  
5 which the waivers would suddenly vanish  
6 into thin air because one of the facets  
7 that was considered in the -- in the GMD2  
8 recommendation on the waivers has changed.  
9 All of the damage and taking argument,  
10 they're also not factually supported.  
11 They're not supported by Mr. Romero's work,  
12 they're not supported by consequences that  
13 are shown or likely as to the Intervenor  
14 who have testified with respect to the  
15 proposal. If you note what those folks  
16 testified to, many of them complained about  
17 conditions of the existing permits. They  
18 complained about chloride impacts. I  
19 believe Mr. Basore acknowledged that he  
20 already had them, and Mr. Carmichael  
21 acknowledged that he was on the threshold  
22 of the area that is expected to have them,  
23 and those -- those well owners are going to  
24 have those chloride impacts if the City has  
25 to do the physical recharge approach, they

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1 will have worse chloride impacts than they  
2 will with the City's proposed  
3 modifications.  
4 And I think we can ascertain that by  
5 looking at the chloride studies. And  
6 Burns & Mac didn't do extensive modeling of  
7 chloride because so much chloride work has  
8 already been done in the aquifer. And the  
9 2014 study shows us with the double pumping  
10 scenario, you know, what might be the  
11 transitory impact that would be somewhat  
12 indicative of what happens in the drought  
13 period. But the much greater impact will  
14 be if the City has to bring those water  
15 levels down to 1998 levels and maintain  
16 them there for a long period of years,  
17 that's going to have a much greater impact  
18 on chloride migration and all of the well  
19 owners that are concerned about that.  
20 So, again, they've inadvertently  
21 compared the proposal's impact to their --  
22 to their dream scenario rather than  
23 comparing it to what will actually happen  
24 if the proposal is not approved and the  
25 City has to accumulate its credits by

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1 drawing the aquifer down and pursuing  
 2 physical recharge to accrue physical  
 3 recharge credits.  
 4 With respect to the whole notion of  
 5 passive recharge credits, yes, indeed, one  
 6 former chief engineer believes that AMCs  
 7 infringe that concept of bad passive  
 8 recharge credit. Another former chief  
 9 engineer, Mr. Barfield, doesn't believe  
 10 that and believes that they can be  
 11 distinguished for the reasons that  
 12 Ms. Murray explained, how all of the  
 13 surface water comes in through the ASR  
 14 infrastructure and is subject to the permit  
 15 conditions and is basically the water that  
 16 could have been injected into the aquifer  
 17 had there been space for that physical  
 18 recharge.  
 19 Also functional equivalent is not a  
 20 figment of the City's imagination, but  
 21 clearly former Chief Engineer Barfield  
 22 recognized that concept as well, showed  
 23 that he understood it, agreed with it, and  
 24 believed that it was reasonable and it is  
 25 logical and rational. I think there's not

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1 a way to rationally avoid the conclusion  
 2 that the AMCs are the functional equivalent  
 3 of physical recharge credits, you're just  
 4 skipping the intermediate step of pumping  
 5 the hole in the aquifer and then plugging  
 6 it with the new infusion of water.  
 7 Then there was one thing that I wanted  
 8 to address in Ms. Wendling's comments where  
 9 she -- she indicated an issue with the use  
 10 of the 1998 water levels in the modeling.  
 11 And I think this is -- this is perhaps a  
 12 failure to understand. Recall that the  
 13 elements of the City's proposal are  
 14 independent and it's possible that the  
 15 credits assumed in the modeling for the  
 16 index level analysis could be physical or  
 17 they could be AMC, we don't know.  
 18 Because the City might be restricted to  
 19 physical credits, it made sense to do that  
 20 modeling based on use of the water levels  
 21 that would be associated with the City  
 22 having had to go through the process for  
 23 physical recharge credits; in other words,  
 24 we've -- we've modeled the index level  
 25 issues with the assumption that the AMCs

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1 have been denied and the City is doing  
 2 physical recharge credits. And that's the  
 3 reason the modeling is done with the 1998  
 4 levels because when the City goes down that  
 5 road to pull the aquifer down and do  
 6 physical recharge 1998 levels is where the  
 7 aquifer will be, and those are the levels  
 8 which in that scenario the aquifer will go  
 9 into the 1 percent drought if it occurs.  
 10 I -- I believe, if I'm not mistaken,  
 11 that Balleau also used those 1998 levels in  
 12 their modeling as well, so I think that's  
 13 the reason; it was intentional and it made  
 14 sense because we're modeling the index  
 15 level issue without knowledge of the source  
 16 of the credits.  
 17 And further responses, to the extent  
 18 they may be warranted, we will just save  
 19 for the written stage.  
 20 **PRESIDING OFFICER:** Okay. Thank  
 21 you, Mr. McLeod. Ms. Murray.  
 22 **MS. MURRAY:** Yes, thank you, I do  
 23 have just a few comments.  
 24 So as Mr. McLeod also kind of alluded  
 25 to, it is our view that essentially the

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1 City's modeling does constitute a showing  
 2 of the things that Mr. Stucky referenced  
 3 that are required by the governing orders,  
 4 things like impairments and impacts to MDS,  
 5 and unreasonable raising or lowering of the  
 6 water table won't occur. I -- realizing,  
 7 you know, that there are differences in  
 8 opinion of the adequacy of that modeling,  
 9 as I spoke earlier, we do feel it was  
 10 adequate and we feel that that modeling did  
 11 con -- did constitute that showing.  
 12 Along the lines of whether impairment  
 13 will occur or is likely to occur,  
 14 Mr. McLeod also sort of alluded to this.  
 15 It is not necessarily, per se, impairment  
 16 just because a user or some users may have  
 17 to drill their wells deeper. Of course,  
 18 there's case law out there on that, and I  
 19 think that's really an issue to be further  
 20 fleshed out in the briefs, but I just  
 21 wanted to make that point.  
 22 As well as that the Clawson case that  
 23 Mr. Stucky referenced, I think the true  
 24 applicability of that case and whether it's  
 25 exactly on point to this situation is -- is

1 also really an issue for the briefs, I  
2 think that there's arguments to be made  
3 that -- that there are some nuances there  
4 that don't apply directly to this instance.  
5 Expanding a little bit also on what  
6 Mr. McLeod said about past definitions  
7 or -- or lack of definition of -- of  
8 passive recharge, if I'm not mistaken, I  
9 don't remember what document it was  
10 exactly, but I think that former Chief  
11 Engineer Pope, quote, unquote, defined  
12 passive recharge in -- in a parenthetical  
13 of some sort in a past order, and -- and I  
14 don't think that you can say that he  
15 created, with that sort of parenthetical  
16 statement, that he created a definition of  
17 passive recharge that we are all beholding  
18 to forever going forward. As Mr. McLeod  
19 pointed out, Mr. Barfield had a different  
20 interpretation, and I think that that was a  
21 valid one. I don't think that Mr. Pope  
22 created a definition that -- that  
23 Mr. Barfield or any future chief engineer  
24 would then necessarily be tied to.  
25 On the topic of ASR credits being junior

1 We recognize, obviously, that that is  
2 problematic for any type of water user, but  
3 for a municipality it carries real, you  
4 know, public health and safety  
5 implications. We -- we don't want to  
6 create a situation where we're even opening  
7 the door for, you know, hospitals, schools,  
8 et cetera to run out of water in the last  
9 years of a MYFA.  
10 I guess I do just want to address, it's  
11 been characterized a few times that the  
12 City has threatened that they will just  
13 pump the hole in the aquifer if they don't  
14 get this proposal approved, and I just want  
15 to, I guess, set the record straight a  
16 little bit because that's -- in my mind,  
17 that's not a threat, and I don't really  
18 like that characterization of it because  
19 it's -- it's simply just what the City  
20 could do and -- and may have to do if this  
21 proposal is not approved.  
22 So I think that's all the comments I  
23 want to make for now. As Mr. McLeod said,  
24 obviously a lot remains for the briefs, but  
25 I will call it good there for now. Thank

1 rights, I just want to point out that, you  
2 know, priority of a water right only really  
3 comes into play when there's not enough  
4 water to go around, i.e., when an  
5 impairment of some sort is occurring. As  
6 has been mentioned a lot, we don't feel  
7 that it will, but if it does, we will  
8 address it when it happens. That's the way  
9 that we treat any sort of an impairment  
10 type of situation. Again, maintaining the  
11 aquifer at a fuller level is better for  
12 water quality, and that'll be the case the  
13 majority of the time under this proposal.  
14 And then lastly, Mr. Stucky has -- has  
15 brought up a multi-year flex account  
16 several times as -- as what the District,  
17 you know, thinks would be a good option for  
18 the City rather than to go forward with  
19 this proposal. It's never been DWR's  
20 opinion that a MYFA is a good option for a  
21 municipality simply because it can sort  
22 of -- just by the way that a MYFA  
23 functions, you could use, you know, more  
24 water at the beginning of it and then run  
25 out of water at the end.

1 you.  
2 **PRESIDING OFFICER:** Thank you.  
3 Mr. Stucky.  
4 **MR. STUCKY:** Thank you, Your Honor.  
5 Before I proceed with my final comments, I  
6 just want to commend all counsel for their  
7 well thought out opposing arguments.  
8 Truly, it's apparent everybody put some  
9 real time and effort into thinking through  
10 their closings today, and although we may  
11 have spirited disagreements, I'm not going  
12 to have the opportunity to talk with any of  
13 you after this hearing, so I just want to  
14 say thanks for the spirited comments that  
15 were raised here.  
16 But with that in mind, obviously as the  
17 District, we have vast differences of  
18 opinion as far as what the City's proposal  
19 means, what the modeling means, and,  
20 indeed, we stand by all the statements that  
21 were made in my initial comments. Of  
22 course, I'm not going to go through all  
23 those points again, but I think the points  
24 are very strong and they're also very  
25 clear. But with that in mind, it was --

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1 there's just a few comments that I heard  
 2 and additional statements from counsel that  
 3 I think are worth rebutting or worth  
 4 addressing, so I'm just going to go through  
 5 just a few of those points.  
 6 First of all, Mr. McLeod indicated that  
 7 the impacts on the aquifer from withdrawing  
 8 these credits or lowering to a new minimum  
 9 desirable -- or new minimum index level are  
 10 overstated. Again, I think this will be  
 11 briefed extensively, there's a lot of  
 12 testimony from Mr. Romero, he had graphs,  
 13 he had charts, all kinds of extensive  
 14 modeling that he did that showed these  
 15 impacts, both with respect to lowering to a  
 16 new minimum index level and with respect to  
 17 withdrawing the aquifer maintenance  
 18 credits, he showed that there were very,  
 19 very significant impacts, and we can brief  
 20 that in great detail. So that's simply  
 21 just a mischaracterization.  
 22 Second of all, with respect to minimum  
 23 desirable streamflow, I heard, I think,  
 24 Mr. McLeod say that this was a nonsensical  
 25 argument of sorts, that minimum desirable

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1 streamflow would be interfered with.  
 2 Again, it's just groundwater 101 that  
 3 there's an interconnectedness between  
 4 surface water, river flow, and groundwater,  
 5 and so it makes perfectly logical sense  
 6 that if you're pulling water out of an  
 7 aquifer and, as you would do with aquifer  
 8 maintenance credits, and you reduce that  
 9 level to a new minimum index level, it's  
 10 going to cause withdrawals, it's going to  
 11 impact minimum desirable streamflow. It's  
 12 just a very simple, common sense argument  
 13 that we're making. But, again, you don't  
 14 have to rely on common sense, we'll brief  
 15 in -- in our briefs extensively how this  
 16 was modeled and predicted by our experts.  
 17 But it was also mentioned by Mr. McLeod  
 18 that the District has failed to follow the  
 19 memorandum of understanding. We deny that.  
 20 There is a condition in there that the  
 21 District and the City need to work together  
 22 to do some monitoring and analysis, and so  
 23 in the event the City is arguing that the  
 24 District failed to follow the memorandum of  
 25 understanding, since it's a joint

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1 responsibility, the City is essentially  
 2 arguing that it itself has failed to follow  
 3 the memorandum of understanding. But it's  
 4 the District's position that we have.  
 5 Moving on to this concept of a  
 6 functional equivalent, whether this is a  
 7 species of the imagination of David  
 8 Barfield or this was a concept that was --  
 9 was developed by the City of Wichita,  
 10 again, it really doesn't matter, functional  
 11 equivalent is not defined in case law, it's  
 12 not defined in statute, regulation as it  
 13 applies to aquifer maintenance credits. So  
 14 the point is the same, simply no  
 15 applicability here. And I'm going to  
 16 circle back to that point at the end of my  
 17 remarks because I think it's quite  
 18 important.  
 19 But another major point that I think is  
 20 worth raising and worth addressing is some  
 21 of the assumptions that are made by the  
 22 Division of Water Resources and by the  
 23 District. The City and the Division of  
 24 Water Resources are arguing and contending  
 25 that this is a good proposal because the

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1 aquifer is going to be kept full, that the  
 2 City will maintain this aquifer at this  
 3 nearly full condition, and as a  
 4 consequence, it's good for all water users.  
 5 Another assumption we've heard is that  
 6 the City is going to first take water from  
 7 Cheney Reservoir. But, again, I guess I  
 8 would submit to you as the hearing officer,  
 9 where in writing do we have that these  
 10 assumptions are -- are going to actually be  
 11 committed to by the City? Where do we have  
 12 in writing that the City is going to first  
 13 take from Cheney Reservoir? Where do we  
 14 have in writing that the City of Wichita is  
 15 going to ensure that the aquifer level is  
 16 kept full? Indeed, there are no permit  
 17 conditions as they exist that require the  
 18 City to do any of these things.  
 19 And in the past, and, again, I -- I  
 20 really hate to live in the past and  
 21 certainly there's no animosity toward the  
 22 City by the District and so I'm really  
 23 trying to hesitate to live in the past, but  
 24 I think it's worth mentioning that in the  
 25 past, the City has committed, and I -- I

1 indicated that contractual commitment in so  
2 many different ways, letters to the  
3 District, letters to landowners, permits,  
4 memorandums of understanding, the City  
5 committed in a whole bunch of different  
6 ways to keep at the current minimum index  
7 level, and now it's breaking that  
8 commitment.  
9 And so this notion of all these  
10 assumptions, the City is going to keep the  
11 aquifer full, pull water from Cheney  
12 Reservoir first, all these assumptions, we  
13 have no assurances that any of that will  
14 occur. And those are all just a bunch of  
15 assumptions that the City's analysis as far  
16 as the benefits are based on.  
17 But moving beyond that, I mentioned the  
18 animosity toward the City. You know, that  
19 is something that we're very sensitive to  
20 as the District. Historically, I think the  
21 District and the City have collaborated and  
22 worked together very well on a number of  
23 projects. The original ASR permitting  
24 approach and the physical recharge concept  
25 was a very revolutionary concept, and I

1 addressed in the future, and that's part of  
2 what you do with impairment. But, again,  
3 if you read the governing statute that is  
4 cited in the three orders, two signed by  
5 Mr. Barfield and one signed by you as the  
6 hearing officer, it indicates that  
7 impairment needs to be considered up front,  
8 it's not something that's just addressed at  
9 a later time, and we have clearly shown  
10 that impairment, two types of impairment  
11 will be caused both from lowering the  
12 minimum index level and from withdrawing  
13 these aquifer maintenance credits. And so  
14 this is far, far, far from a speculative  
15 danger. This is a real threat, a real  
16 danger that we've been able to show through  
17 our -- our modeling.  
18 I think I -- I did hear in the final  
19 comments from the Division of Water  
20 Resources that they're now conceding that  
21 safe yield, minimum desirable streamflow,  
22 all those elements need to be shown up  
23 front by the City, I think they revised  
24 their argument in that regard, so I think  
25 we all agree that that's something now that

1 think the District proved to be a very good  
2 partner in that. And Mr. Boese, all the  
3 way back to the early 1990s, the inception  
4 of it, I think, has always been a good  
5 partner, has always been very involved, he  
6 testified that he is -- he wants to be a  
7 good partner with the City, and so this has  
8 nothing to do with animosity toward the  
9 City, absolutely nothing to do with it.  
10 It's just, simply put, that the District  
11 believes that this is not a beneficial  
12 concept or a beneficial idea. The idea of  
13 lowering to a new minimum index level and  
14 to take out these fictitious or -- or  
15 illusionary aquifer maintenance credits and  
16 withdraw them, again, just not a good  
17 concept, and it's demonstrated by extensive  
18 modeling. Nothing to do with any kind of  
19 animosity toward the City.  
20 I also heard mention of the fact that  
21 this is just some sort of speculative  
22 danger, this impairment is speculative. I  
23 heard mention of that, but, again, you  
24 know -- and it was also, I think, mentioned  
25 that this is something that could be

1 the City must show.  
2 But this concept of passive recharge  
3 credits, again, we hear -- we're hearing  
4 talk about passive recharge credits, and  
5 I'm just going to circle back for a moment  
6 to the hearing. I -- Mr. McCormick and  
7 Mr. Pajor, a variety of different witnesses  
8 from the City, were on the stand and I was  
9 cross-examining them and I said, so let me  
10 get this straight, when you left water in  
11 Cheney Reservoir, that was considered a  
12 passive recharge credit, you shouldn't get  
13 any credit just for simply leaving water in  
14 Cheney Reservoir -- or, I'm sorry, for  
15 pumping from Cheney Reservoir first. That  
16 was asked and they said, yes, that's a  
17 passive recharge credit; if we're given  
18 credit for pumping Cheney Reservoir first,  
19 that's -- that's very much so a passive  
20 recharge credit.  
21 So then I asked, well, let's say  
22 hypothetically that you pump from El Dorado  
23 Reservoir or you take water out of the  
24 Arkansas River and -- and should you get a  
25 credit for that, and the implication was,

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1 yeah, that could be a passive recharge  
2 credit as well. And so I don't see how  
3 it's any different here. If the City tries  
4 to get some sort of credit for pumping  
5 directly out of the Little Arkansas River,  
6 sending it straight to the City of Wichita,  
7 how that's any different than trying to get  
8 a credit from pumping out of Cheney  
9 Reservoir? Again, you know, logically  
10 consistent, it's the same thing. Again, if  
11 it's a duck -- quacks like a duck, it's  
12 certainly a duck, it's a passive recharge  
13 credit in this case as obvious as I'm  
14 sitting here today.  
15 But moving beyond to the concept of  
16 passive recharge credits and functional  
17 equivalent, again, I don't feel the need to  
18 circle back to all the arguments I raised  
19 before, we stand by them, this is going to  
20 cause harm to the aquifer in a whole  
21 variety of different ways if you adopt the  
22 City's proposal, it's going to interfere  
23 with all the other constituents of the --  
24 users of the aquifer, with water quality,  
25 impairments, minimum desirable streamflow,

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1 And number six, it's then diverted to the  
2 City.  
3 Now, if we move to aquifer maintenance  
4 credits, what we can quickly do is just  
5 cross out three of the steps, we can just  
6 cross out the middle three steps because  
7 with aquifer maintenance credits, all that  
8 happens is water is taken out of the Little  
9 Arkansas River, diverted to the City of  
10 Wichita, it's treated, and then it's used  
11 by the City at a later time. So just --  
12 just the final three steps, we don't have  
13 any injection into the aquifer, we don't  
14 have any kind of recharge credit based on  
15 physical recharge, we don't have any kind  
16 of water that is stored in the aquifer or  
17 that can be placed there for some sort of  
18 subsequent use. The notion that this is a  
19 functional equivalent flies in the face of  
20 not only statutes and regulations but plain  
21 common sense.  
22 And so for all of these reasons, we are  
23 asking you to deny the City's proposal.  
24 **PRESIDING OFFICER:** Thank you,  
25 Mr. Stucky. Ms. Wendling.

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1 a whole host of different harms that we've  
2 identified. And, indeed, it's -- it's  
3 frankly illegal, it's not defined by  
4 statute, all the same concerns still exist.  
5 But I'm not going to go through them again.  
6 But with that in mind, I just want to  
7 mention and circle back to this concept of  
8 aquifer maintenance credits and physical  
9 recharge credits being the same because  
10 it's been raised over and over again. And  
11 so with that in mind, I'd just like to hold  
12 up to my screen just for a moment, I've  
13 written six -- six concepts that have to do  
14 with aquifer maintenance credits and  
15 physical recharge.  
16 You can see here that the first one is  
17 water taken from the Little Arkansas River,  
18 and this is with respect to physical  
19 recharge credits, water is taken from the  
20 Little Arkansas River, it's treated, and  
21 then it's injected into the aquifer,  
22 number three. Number four is the recharge  
23 credit is created based on beneficial use  
24 obtained for physical recharge.  
25 Number five, it's stored in the aquifer.

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1 **MS. WENDLING:** Just a few quick  
2 points. I think it was addressed that to  
3 be concerned with minimum desirable  
4 streamflow during a drought is a bit  
5 ironic, and I would just like to say that  
6 we're concerned about minimum desirable  
7 streamflow and the effects of this pumping  
8 on minimum desirable streamflow at all  
9 times.  
10 There is not a requirement in the  
11 proposal that the City keep the aquifer  
12 full and thereby protect minimum desirable  
13 streamflow. The City is not limited to  
14 using their credits only during times of  
15 drought, so that impact could happen at any  
16 point in time. And, similarly, the City is  
17 not limited to drawing down the -- to the  
18 new proposed minimum index levels only  
19 during a time of drought. The City's  
20 requesting these changes to apply at any  
21 point in time for the City to use how,  
22 when, and in any manner that they chose.  
23 And then going back to the  
24 reasonableness of the model for purposes of  
25 evaluating the proposal, it is hard for me

1 to see how a model that considers less than  
2 half of the withdrawal contemplated is --  
3 is fit for purpose. The City's model does  
4 not match the terms that they are  
5 requesting in their proposal. The City's  
6 model does not contemplate a withdrawal,  
7 even at 19,000 acre-feet per year, of the  
8 120,000 acre-feet of water, of AMCs. The  
9 City's model does not reflect what happens  
10 if the aquifer is drawn down during a time  
11 of drought to the newly proposed minimum  
12 index levels.  
13 These are the changes that are -- should  
14 be in the model and would have eliminated a  
15 significant amount of uncertainty  
16 throughout this entire process if those  
17 actual conditions that are being asked for  
18 had been modeled by the City, we could have  
19 saved ourselves a lot of trouble.  
20 And those are the two major things that  
21 I think need further consideration and  
22 analysis to appropriately make the decision  
23 regarding this proposal. Thank you.  
24 **PRESIDING OFFICER:** Okay, thank you.  
25 Okay. Having heard the closing arguments

1 this case after something like 13 days  
2 worth of testimony. As I mentioned  
3 earlier, public written comments will be  
4 accepted until 5:00 o'clock on February 26,  
5 and the instructions for doing that are on  
6 the Division of Water Resources' website,  
7 they have a dedicated Wichita ASR page, and  
8 that includes that information. At that  
9 time, the record will close on this case,  
10 so there will be no new evidence accepted  
11 after 5:00 p.m. on February 26.  
12 As I mentioned, following that, there  
13 will be briefing by the parties, and  
14 following that will be a recommended order  
15 that I will issue to the chief engineer and  
16 simultaneously to the parties.  
17 I do want to thank all counsel for their  
18 professional and enduring involvement in  
19 this case, especially in regards to  
20 responding to the disruptions of COVID-19.  
21 And I believe that also extends to your  
22 clients, as well as to the public at large.  
23 So we've all had quite a bit of disruption  
24 due to the pandemic, and this was no  
25 exception, so I appreciate everyone dealing

1 and rebuttal arguments from all counsel,  
2 believe it or not, that concludes --  
3 **MS. MURRAY:** Madam Hearing Officer,  
4 I'm sorry, could I --  
5 **PRESIDING OFFICER:** Do you have  
6 something to add?  
7 **MS. MURRAY:** Could I just --  
8 **PRESIDING OFFICER:** We're never  
9 going to conclude this, are we?  
10 **MS. MURRAY:** I just wanted to  
11 address -- Mr. Stucky referenced in his  
12 rebuttal comments that DWR had, in his  
13 thinking, revised some of our arguments,  
14 could I just address that just very, very  
15 quickly?  
16 **PRESIDING OFFICER:** I think you can  
17 put that in your brief if you would like.  
18 **MS. MURRAY:** Okay.  
19 **PRESIDING OFFICER:** I understand  
20 that might be efficient to let you do it  
21 now, but I think we better stick with our  
22 limitations on -- on the responses right  
23 now.  
24 So at long last, this concludes the  
25 testimony, the public hearing testimony of

1 with that with very good grace and -- and  
2 class.  
3 Before we close the record for today,  
4 does anyone have anything else to mention?  
5 Okay. I would ask counsel to stay on  
6 for a few minutes after the record is  
7 closed. It is now 10:57 a.m., and we are  
8 now off the record.  
9 (Whereupon, the proceedings were  
10 concluded at 10:59 a.m.)  
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	3641:25	3605:6;3626:4	3571:22;3636:20	3628:24;3631:5; 3637:23
<b>\$</b>	<b>accumulated (7)</b>	<b>addition (2)</b>	<b>again (38)</b>	<b>allowing (2)</b>
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